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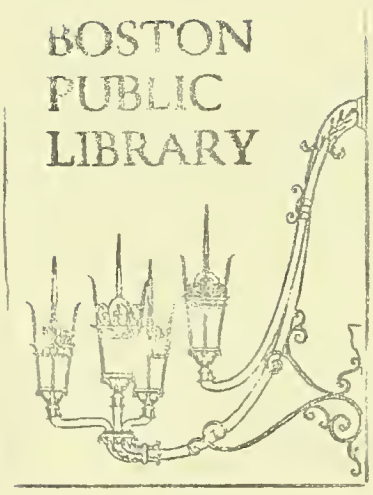
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Prepared for the

MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

By

EDWARDS AND KELCEY
Thomas E. Wetmore, Director
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October 28, 1966

Commissioner Robert L. Yasi
The Commonwealth of Massachusetts
Department of Natural Resources
State Office Building
100 Cambridge Street
Boston, Massachusetts

Dear Commissioner Yasi:

In accordance with our agreement of July 7, 1965, we are pleased to submit our report on the Massachusetts Outdoor Recreation Plan.

We have reviewed the Massachusetts 1957 Public Outdoor Recreation Plan, Part II, and have compiled additional data, prepared projections, and undertaken analysis to update this plan for current usage.

The revised plan is a statement of present and future demand, supply, and needs for outdoor recreation resources and facilities, together with a program of implementation to meet these needs.

We appreciate the opportunity to undertake these studies and are grateful to the Department, your staff, and the many officials of the public and private agencies who contributed so willingly to the completion of this project.

Very truly yours,

EDWARDS AND KELCEY, INC.

H. Alfred Pontier

H. Alfred Pontier
Vice President

HAP/rta

ACKNOWLEDGEMENTS

In the course of updating and revising the Massachusetts Outdoor Recreation Plan many agencies and individuals contributed information for inclusion in the Plan. In addition suggestions which aided immeasurably in formulating many of the programs and policies which are proposed were freely offered. We are particularly grateful to the former Commissioner Charles H. W. Foster and the present Commissioner Robert L. Yasi as well as the staff of the Department of Natural Resources for their sustained interest in the preparation of the plan. Many other agencies also provided valuable aid. Among these the U. S. Bureau of Outdoor Recreation deserves special note. The pioneering work of the Outdoor Recreation Resources Review Commission was extensively consulted and many of the findings provided guidelines for this study. Other agencies which were of direct help in the provision of data and advice include the: Massachusetts Division of Fisheries and Game; Massachusetts Division of Water Resources; Metropolitan District Commission; Massachusetts Departments of: Agriculture, Commerce and Development, Mental Health, Public Health, Public Works; Massachusetts Mental Retardation Planning Project; New England Interstate Water Pollution Control Commission; Trustees of Reservations; University of Massachusetts; Central Massachusetts Regional Planning Commission; Central Merrimac Valley Planning Commission; Franklin County Regional Planning Commission; Metropolitan Area Planning Council; Southeastern Massachusetts Regional Planning Commission; Several Federal Government Agencies: Fish and Wildlife Service, Forest Service, General Services Administration, National Park Service, Public Health Service, Soil Conservation Service; Connecticut Department of Agriculture and Natural Resources; Connecticut Development Commission; Maine State Park and Recreation; New Hampshire State Planning Project; New Jersey Department of Conservation and Economic Development; New York Conservation Department; Rhode Island Development Council; Vermont Department of Forests; Palisades Interstate Park Commission; Massachusetts Audubon Society; Massachusetts Forest and Parks Association; Appalachian Mountain Club; Permanent Charity Fund, Inc; Fund for the Preservation of Wildlife and Natural Areas; New England Council; Massachusetts Golf Association; United Community Services of Metropolitan Boston; National Golf Foundation and finally the American Automobile Association.

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Chapter I

INTRODUCTION AND SUMMARY OF FINDINGS

Introduction

The period of history when Americans were concerned with "taming the wilderness" has ended. Yet, because a wilderness existed not too many years ago, Americans feel a strong identification with the out-of-doors. The openness of the continent when originally settled was awe-inspiring in its vastness; it is still vast and open when compared with most regions of Western Europe. Today, however, open space is unequally distributed throughout the country and is being rapidly consumed. We can no longer expect to enjoy traditional resources without conscious effort to preserve them, especially in our expanding urban areas.

Our ability to experience the freshness of nature becomes more difficult as our focus shifts from the direct use of natural resources toward an increasingly mechanical and indoor means of earning a living. Most people live today in metropolitan areas where open space is not immediately accessible. The shift from a rural to an urban way of life has in effect diminished the availability of our outdoor recreation experiences.

Much useless exploitation has occurred in the name of economic development, yet such development could not have progressed without the use of nature's resources. Few would want man's progress to cease. Similarly few would care to see the entire continent in a state of urban development. Our cities are reservoirs of wealth, just as our natural areas are well-springs of opportunity to escape urban pressures. The question, then, is not one of total development or total preservation; it is one of wisdom applied to proper use.

After the end of the Second World War pent-up demands for housing, highways, schools, industrial sites, and facilities of all sorts were released. Land was required for all of these uses and this land was taken from the nation's stock of open space. The pressure for development continues as the population and the goods and the services it can afford increase. In addition, leisure time is also increasing. The American public is using much of this leisure time to seek the out-of-doors. The problem of providing meaningful outdoor recreation thus becomes more pressing each year.

In an effort to preserve an environment which will continue to provide valuable outdoor experiences, the Federal Government has taken action. In 1958, mindful of the challenge which lies ahead in preserving and developing the out-of-doors and desiring to focus attention on the importance of outdoor recreation to national goals, Congress established the Outdoor Recreation Resources Review Commission. The goals of this Commission are threefold:

> To determine the outdoor recreation wants and needs of the American people now and what they will be in the years 1976 and 2000.

To determine the recreation resources of the Nation available to satisfy those needs now and in the years 1976 and 2000.

To determine what policies and programs should be recommended to ensure that the needs of the present and future are adequately and efficiently met.[1]

The purpose of this congressional action was to stimulate outdoor recreation opportunities for the general public. Some of these opportunities can be provided in a natural or wilderness environment. Many will have to be developed where they are convenient and accessible, if they are to encourage development of physical skill and emotional health in the maximum number of individuals.

Massachusetts has recognized the importance of outdoor recreation for many years. In 1957 the Massachusetts Department of Natural Resources inventoried recreation lands and facilities and prepared an acquisition and development plan. The recreation plan presented here is an updating of this earlier work and a re-formation of the plan.

The outdoor recreation goals of Massachusetts are consistent with national aims and embody the concept that meaningful recreation experiences should be available for all the people of the Commonwealth. This goal will reach fulfillment by providing RECREATION TO A PROPORTIONATELY EQUAL EXTENT IN EACH OF THE SEVEN REGIONS OF THE COMMONWEALTH WHILE RECOGNIZING THE UNIQUE CHARACTER OF EACH REGION and by providing, PARTICULARLY IN AND AROUND METROPOLITAN AREAS, THE LEADERSHIP AND ASSISTANCE NECESSARY TO ASSURE ADEQUATE RECREATION OPPORTUNITIES AT THE LOCAL LEVEL. The achievement of these goals requires that the Commonwealth:

1. Assure that recreation and open space are given their proper place as prime land uses.
2. Plan effectively with neighboring states and the Federal Government.
3. Clarify the division of responsibility between the Commonwealth and the cities and towns.
4. Promote desirable private development of outdoor recreation facilities.
5. Emphasize that careful publicizing of recreation facilities is important.
6. Establish continuing planning programs.
7. Develop co-ordinated methods of financing development.
8. Establish clear priorities for recreation development.

---

[1] ORRRC Summary Report, p. 2.

Summary of Findings

In 1965, 3 million people engaged in outdoor recreation on a summer weekend day in Massachusetts. This number will rise to 3.4 million by 1970 and to 6 million in 2000. Leisure time and income are the two most important factors affecting participation in recreation; therefore, the expected doubling in activity is largely due to increases in these factors in conjunction with population growth.

Seventy per cent (70%) of recreation activity in Massachusetts occurs near home. Only thirty per cent (30%) occurs on a vacation, trip, or outing.

Water is a focal point for recreation. Among the active pursuits, swimming is the most popular activity for persons on vacations, trips, and outings; fishing ranks second, followed by boating. For persons recreating near home the most popular pursuits are those which can be engaged in for a short period of time. Among the active pursuits competitive outdoor sports, swimming, and picnicking head the list.

The demand for recreation near the home naturally is greater in the heavily populated metropolitan centers. The most popular areas of Massachusetts for persons on vacations, trips, and outings are the well-known recreation centers. Cape Cod and the Islands take the lead, followed by the Berkshires and Southeastern Massachusetts in vacation environment.

In Massachusetts, the supply of public recreation land holdings of regional significance falls 62,000 acres below the average when compared on the basis of use with the adjacent states of Connecticut and New York. The shortage is greatest in the State's metropolitan areas.

Development of recreation facilities is the prime need throughout Massachusetts although the emphasis varies with the particular regional situation. In western Massachusetts water resource development is crucial. In eastern Massachusetts the urgent need is for facilities to serve more than half the State's residents.

State development of public recreation facilities should be concentrated in activities which have broad appeal, are in short supply, and are of traditional interest to the State. These are: swimming, fishing, picknicking, boating, hunting, and camping. Supplementary activities should be provided in conjunction with these.

The cities and towns of Massachusetts require a major program to assess the extent of local recreation facilities and to measure the demand for recreation at the community level. The State can aid community efforts by stimulating interest and offering guidance and financial aid.

An initial five-year program for public outdoor recreation for the people of Massachusetts and their visitors requires an investment of 45 million dollars: 23 million for land and 22 million for facilities. Most of this land should be developed into major recreation facilities.

Chapter II

THE SETTING

Regional Location

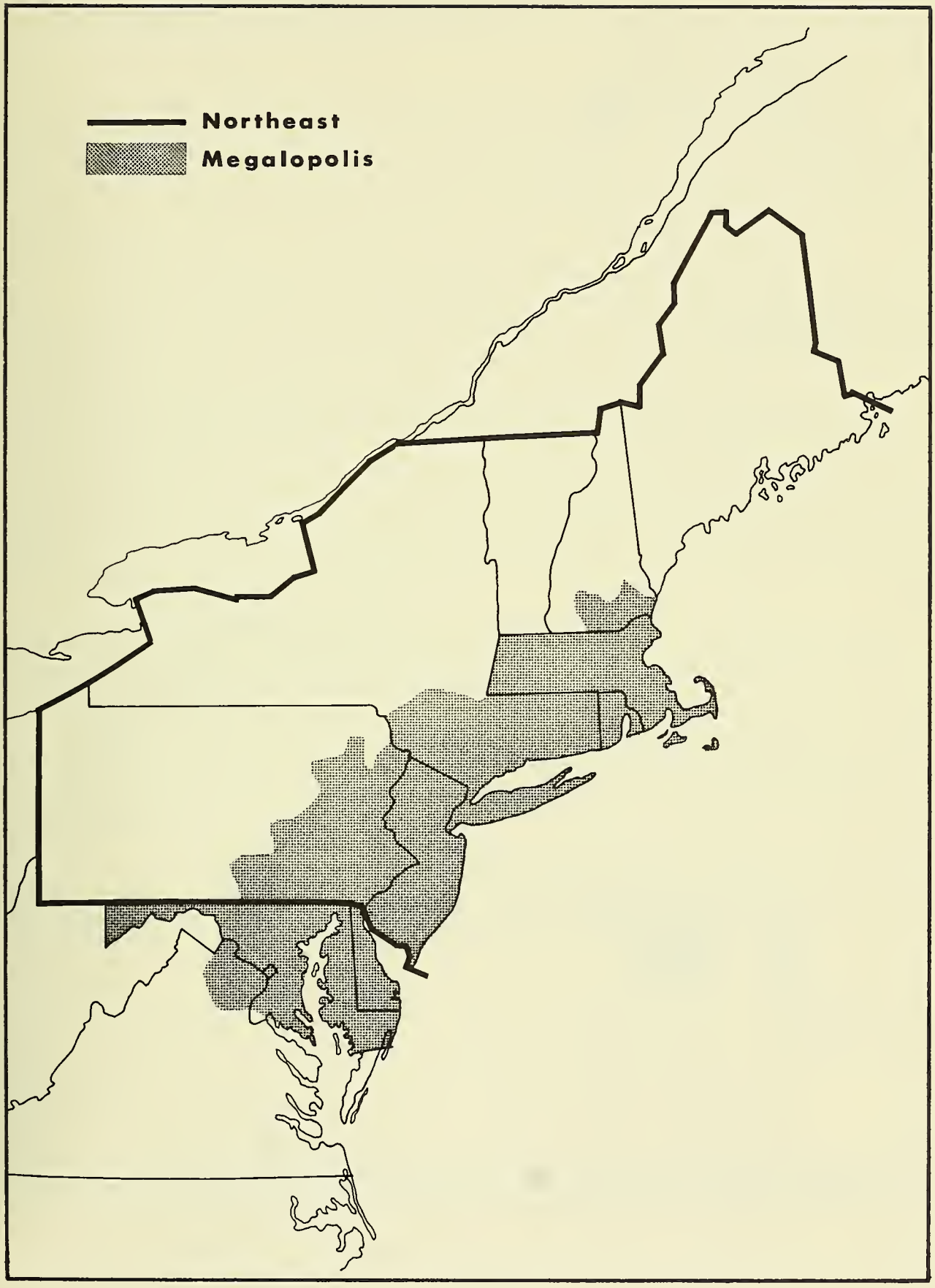
Massachusetts is located at the northern end of the most intensely developed and diverse metropolitan complex in the Nation. Boston represents the northern anchor and Washington, D. C. the southern limit of this 53, 575 square mile corridor of development. The area, referred to as Megalopolis, runs parallel to the northeastern seaboard and is bounded inland by the Appalachian foothills. Within it, 37 million people or 20 per cent of the Nation's population resided in 1960 on 2 per cent of the nation's land. As a group the population of Magalopolis thus lives in a highly dense social and economic environment. Its early locational advantage made the development of centralized activity possible. Thus, the rest of the nation has come to rely on Megalopolis for many essential services and products.

The population density of Massachusetts (655 persons per square mile) is somewhat below the average for Megalopolis (700 persons per square mile) and its residents are fairly evenly distributed on the land. Growth has been less extensive in Massachusetts than in other parts of the region. Consequently an uncongested atmosphere exists in most parts of the state while it has been lost in many other areas of Megalopolis. With thoughtful action, Massachusetts can capitalize on this advantage. Its environment can benefit not only its own citizens but all of the residents of the Northeast.

The Heritage

The heritage of Massachusetts springs from events which underly the governmental, industrial, as well as outdoor, orientations of the nation. Here the Pilgrims established a system of self-government that allowed each citizen an equal vote in communal governmental matters; this system is the backbone of the democratic process. Early settlers learned to till the rocky and often unyielding soil, and agricultural products were raised in spite of the trying conditions. Soon the abundant resources of the sea were harnessed; the fishing industry provided food in quantity for residents as well as for export to other parts of the developing nation. The timber of Massachusetts was put to work to build a bustling economy, and Massachusetts' shipbuilders achieved prominence throughout the nation and much of Europe. The inland water resources were harnessed to provide power for many growing industries. Thus, the spiral of national economic expansion has roots in New England and much was contributed by Massachusetts.

FIGURE 1



Economic expansion and growing wealth did not blind our forefathers to the intangible value of the out-of-doors. Although mass recreation as we know it today did not take place, the spiritual and renewing quality of contact with an uncluttered open environment was thoroughly appreciated; it is reflected in the works of Thoreau and Emerson and passed directly to us through Robert Frost.

We benefit today from these early orientations. There are in Massachusetts more outdoor, historic, and cultural sites per square mile than anywhere else in the nation. These show a wide range of types: historic trails in Boston and Cambridge; specific sites such as those at Plymouth Rock and Provincetown; Sturbridge, where the activities of our ancestors are recreated in their original surroundings; and finally to areas where native animals are allowed to live unmolested and can be viewed in their natural habitat.

The recreation image of Massachusetts also focuses on its extensive coast line and inland areas with rolling hills, mountains, valleys, and major water resources.

The Regions

The regions of Massachusetts offer a wide variety of recreation opportunities, which may be generated by the salt waters of Cape Cod and the Islands or the rolling Berkshire Hills.

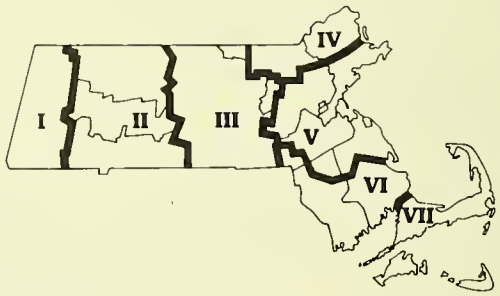
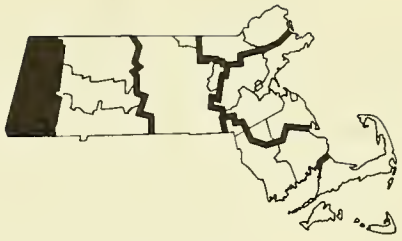


TABLE I: MASSACHUSETTS: REGIONAL POPULATION TRENDS AND FORECASTS, 1950-2000.

Region	Population: Number in 000's				Population: Per Cent Change		
	1950	1960	1970	2000	1950-1960	1960-1970	1970-2000
I	133.0	142.1	163.4	229.2	+ 6.8 %	+ 15.0 %	+ 40.3 %
II	508.3	587.4	672.2	1,010.0	15.6	14.4	50.3
III	584.5	625.5	722.6	1,112.0	7.0	15.5	53.9
IV	370.0	418.1	503.1	863.1	13.0	20.3	71.6
V	2,606.2	2,833.4	3,267.2	5,065.4	8.7	15.3	55.0
VI	432.6	462.2	522.7	769.5	6.8	13.1	47.2
VII	56.0	79.7	106.6	216.8	42.0	33.8	103.4
Massachusetts	4,690.6	5,148.4	5,957.8	9,266.0	9.8	15.7	50.5

Source: See Population Section in Appendix B.



REGION I

The Berkshire Hills are composed of low lying mountains; remnants of gradual mountain building forces which had their initial movements many millions of years ago. The mountains as they now appear are eroded evidence of peaks once thousands of feet higher. The characteristic rounded appearance of the Berkshire Hills is, therefore, a result of the sanding process of time, which has molded the hills to the form we now enjoy.

The Berkshire Region is the least densely settled area of Massachusetts. It is home to about 142,000 persons of which 74,000 (52%) reside in the country's major metropolitan area, Pittsfield, which includes four communities. Thus, the major portion of the social and economic activity occurs in a relatively compact physical setting, leaving the remainder of the area free from urban development. The majority of residents earn their living in occupations related to the production of manufactured products, with particular emphasis on the expanding electrical machinery industry. Another specialty in the Berkshires is the production of nondurable products including textiles.

The Berkshires are expected to expand their population at an increasing rate in future years. The 1950-60 rate of expansion, 7 per cent, is forecast to double during the 1960's. This rate of increase does not imply a redistribution of population; the Berkshires are expected to maintain their 1960 share — 3 per cent — of the State's total population in the future.

The Berkshires contain an interesting variety of mountains, clear mountain streams, valleys and plateaus and include many forests, parks, and reservations. Mt. Greylock, the highest mountain in the Commonwealth (3,491 feet) lends grace and form to the Region, while Tanglewood and the many other cultural attractions in the region provide entertainment in a unique setting.

REGION II

Known as the Pioneer Valley, Region II embraces the Connecticut Valley and the hills surrounding it. It is an ancient remnant of a tremendous geologic fault, which caused the dropping of a major portion of the area along a line of weakness in the earth's crust. The

Valley is a long thin area comparable to similar geologic occurrences that extend from northern New England into New Jersey.

This area contains the second largest metropolitan center in Massachusetts: Springfield - Holyoke - Chicopee. Eighty per cent of the region's population reside in this metropolitan area. Outside of it, the flavor of rural New England prevails. Economic activity is diversified although specialized manufacturing industries exist in metal products and machinery as well as in nondurable goods. There is less reliance here on industries that have declined in New England, such as textile production. The emphasis on growth industries probably accounts for the comparatively rapid population growth of the region (+16%) during the 1950's. The Region also has a concentration of educational facilities and in this regard is second only to the Boston area. The Connecticut Valley area is expected to continue its growth at approximately the same rate as occurred during the 1950's and to exceed that expected for the state as a whole.

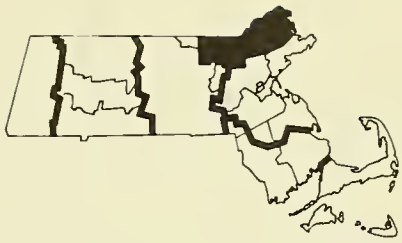
REGION III

The Massachusetts highland area, Region III, is roughly equivalent to Worcester County. The region lacks unique natural features on a large scale, but is characterized by rolling hills set with many lakes and ponds. Many picturesque New England villages are set in this region, which also contains several highly attractive public recreation areas. The vast Quabbin Reservoir, the largest fresh water body in southern New England, lies along its western boundary. This reservoir supplies the water needs of millions of people in the eastern part of the Commonwealth and consequently has not been extensively developed for recreation use.

As one moves east in Massachusetts population densities increase, and Region III is more densely settled than either the Berkshire or the Connecticut Valley areas.

The region includes the Worcester and Fitchburg - Leominster metropolitan areas, which together contain 65 per cent of the region's population; a smaller proportion than are found in metropolitan areas in other parts of the state. Worcester County was settled early in the history of the Commonwealth and functioned as an important manufacturing and distribution center.

Worcester is today the trade and service center for the region and is also a center for the manufacture of metal products. This region experienced a 1950 - 1960 growth rate (+7.0%), which was somewhat below the average for the State (+9.8%). In future years, however, it is expected to keep pace with state-wide increases.



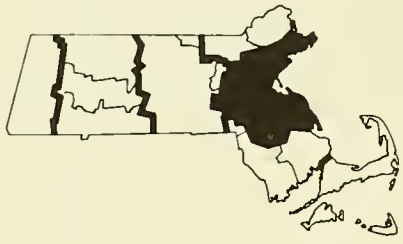
REGION IV

The Assabet, Sudbury, and Concord River Basins, in the Massachusetts portion of the Merrimac River Valley, are included in Region IV. Some of the finest beaches in New England are found here, including Crane's Beach, Salisbury Beach, and Plum Island. The beautiful and unique tidal marshes lend an open air to the coastal section of the region. In its coastal villages, prime historic sites offer a true Yankee flavor.

The tidal marshes noted above are quiet areas protected from the sea, and their low waters give rise to a particular ecologic situation. The brackish-water environment is home to numerous shore birds, which the marshes protect.

Region IV is one of the smallest recreation regions but one of the most diverse in variety of environments. It has a comparatively high population density and has experienced an above average rate of population growth in the past fifteen years. Two of the state's moderate sized metropolitan areas are located in the Merrimack Valley, Lowell and Lawrence - Haverhill. Seventy-six per cent of the Region's population reside in these centers.

Both metropolitan areas maintain a specialization, developed early in their history, in textile and leather-related industries. Both, however, have also branched into the electrical machinery industry. The Merrimack Valley area has also become more closely allied with developments in Boston and is a major gateway to New Hampshire as well. Its location is therefore favorable and growth is expected to occur at a somewhat faster pace than that set during the 1950's.



REGION V

Metropolitan Boston is the dominant element in Region V. In the years immediately following 1892, Boston led the nation in metropolitan park development. The excellent basic pattern of inland forest, ocean beach, pond, lake, and river reservations, were established then, and the extensive park system acquired. Major scenic attractions such as the Blue Hills and the Middlesex Fells were preserved, and the Charles, Mystic, and Neponset River

Valleys were in part replanned and protected.

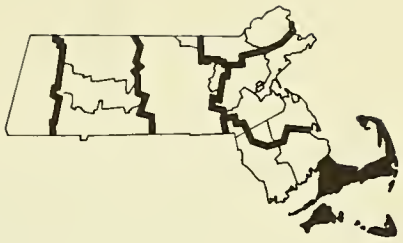
The Boston region is the most highly developed in the state; 97 per cent of its population reside in the Boston and Brockton Metropolitan Areas and almost all of the area lies within the boundaries of a defined metropolitan complex. The region is the largest, densest, and most highly diversified in the state, and contains 55 per cent of Massachusetts' population. Growth rates have approximated those for the state as a whole and are expected to continue to do so in the years ahead.

The Boston region is noted for its historic and cultural attractions. One of the most important is the "Freedom Trail," a pedestrian tourist route with such national shrines as Faneuil Hall, Old North Church, and the Old State House. The recently established "Heritage Trail" in Cambridge includes Henry Wadsworth Longfellow's House and Harvard Yard.

REGION VI

Region VI encompasses southeastern Massachusetts excluding Cape Cod and the Islands. The region contains approximately 462,000 residents and two metropolitan areas, Fall River and New Bedford, which contain 60 per cent of the region's population. Growth in the metropolitan areas has been minimal: Increases amounted to only 2,600 residents between 1950 and 1960. This slow rate of growth is derived from the close ties that the Fall River and New Bedford areas have to industries which have declined in New England in general. As a consequence the region suffers from high unemployment and low wages.

The physical setting of the region anticipates that of the Cape. Slightly rolling topography and generally fertile soils characterize the area; open vistas prevail and scrub pine grows freely in the more sandy sections. The Taunton River Basin, the upper reaches of the Charles and Neponset River Basins, and the South Shore of Massachusetts Bay are located within the regional boundary. The communities on its coast are rich in sea lore and steeped in the Old Yankee coastal heritage. Plymouth Rock, highly popular Myles Standish State Forest, and Freetown-Fall River State Forest are in this region, which is becoming increasingly popular for outdoor recreation.



REGION VII

Cape Cod and the Islands differ from the other regions of Massachusetts in many ways. There are no metropolitan areas here, and it is the smallest (86,000 population) and least populated section of the State. It is, however, the fastest growing region. The proportionate gain during the 1950's — 42 per cent — far exceeded that for any other region.

The tourist-oriented economy of the Cape is reflected in its employment structure; of the 21,000 employed persons 4,833 or 23 per cent are employed in retail trade and personal services. In Massachusetts as a whole only 13 per cent of employment is in these groups.

Cape Cod is the most popular vacation region in Massachusetts and contains a variety of beaches, which are one of its primary attractions. The Cape has an appeal quite different from the other regions of Massachusetts. Here the panorama displays graceful and extensive ocean views, sand dunes, and villages of quaint and quiet charm.

Chapter III

RECREATION DEMAND

Introduction

The rising productivity of our industrialized nation has long since passed the point of supplying merely basic needs for human existence. As industrialization continues, the work-week declines, incomes rise and the pressures of earning a living shift to the pursuits of enjoying that living.

More and more people now live in sheltered, urbanized environments and look to the outdoors for newness and variety. A substantial portion of their increased leisure time is turned toward the outdoors for fulfillment. These circumstances have brought with them demands for new orientations toward recreation and for knowledge about the nature of a meaningful recreation experience.

Recreation and Metropolitan Development

The extent of metropolitan development in the nation has important implications for outdoor recreation. In 1960, 63 per cent of the national population resided in a metropolitan area as defined by the Bureau of the Census. Under conditions of moderate urban expansion, 73 per cent of the nation's population will reside in these intensively developed areas by 2000 and if the pace keeps up as it did during the 1950's this proportion could be 81 per cent (Source: ORRRC Report #23, p. 88). Massachusetts has already exceeded even this high expected concentration of population in metropolitan areas; in 1960, 84 per cent of the State's population resided in a metropolitan area. In fact, it is possible to travel three-quarters of the distance across the State without leaving a defined developed area; conceivably, all of Massachusetts will one day be included in a series of metropolitan areas.

Many of the communities included in metropolitan areas are still rural in character and the fact of inclusion does not imply intensity of development everywhere in the area. It does imply, however, dependence on a major urban center and the existence of relatively extensive development.

In terms of supplying recreation demand, the implications of metropolitan growth are clear. Stated in the words of the Outdoor Recreation Resources Review Commission:

> Whatever the demand is for, it is concentrated where the people are, in metropolitan areas. The pressure is most acute in the Northeast, fast becoming one long city. . . . This metropolitan population must get most of its recreation in the metropolitan region, and, for all practical purposes, the existence of extensive

facilities somewhere else is little compensation for lack of them at home. (ORRRC Summary Report, p. 26.)

Recreation Travel

While Americans are highly mobile people in the sense that they change their homes and jobs with greater frequency than the people of most other nations, their total recreation experience occurs for the most part within a fairly limited area. Automobiles and highways have made it possible to traverse great distances in a short time; nevertheless, on a vacation more than half of the vacationers seek recreation within one or two days' travel from their homes. Considering weekend and day trips, travel is limited to a few hours. This is not to say that Americans do not travel to distant places, but rather that when considering recreation activity, most demands are satisfied within familiar territory. This fact is illustrated in Table 2.

TABLE 2: UNITED STATES: AVERAGE DISTANCE TRAVELLED ONE-WAY BY PERSONS ON VACATIONS, TRIPS AND OUTINGS, Number per Person, 1960 AND FORECASTS TO 1976 and 2000.

	Miles			Number of Vacations, Trips and Outings per Person 12 years of age and older		
	1960	1976	2000	1960	1976	2000
Vacations	637	701	776	.61	.77	.94
Trips	112	118	120	.85	1.10	1.37
Outings	26	26	27	6.20	7.50	9.00

Source: ORRRC Report #26, p. 24.

The average distance travelled on an outing is only 26 miles in one direction. A person residing in the Boston area is thus likely to remain there for his more casual recreation activities, which occur far more frequently than the longer vacations and trips. This situation is expected to remain much the same for the next forty years. Vacation travel will cover a greater distance, but trips are expected to increase by only eight miles and outings are expected to remain essentially the same in distance traveled. At the same time there will be many more people residing in metropolitan areas. As has been pointed out (in the ORRRC reports) this does not mean that recreation areas removed from major population centers are less important. However, it does imply that efforts to supply recreation in and near metropolitan areas should be increased.

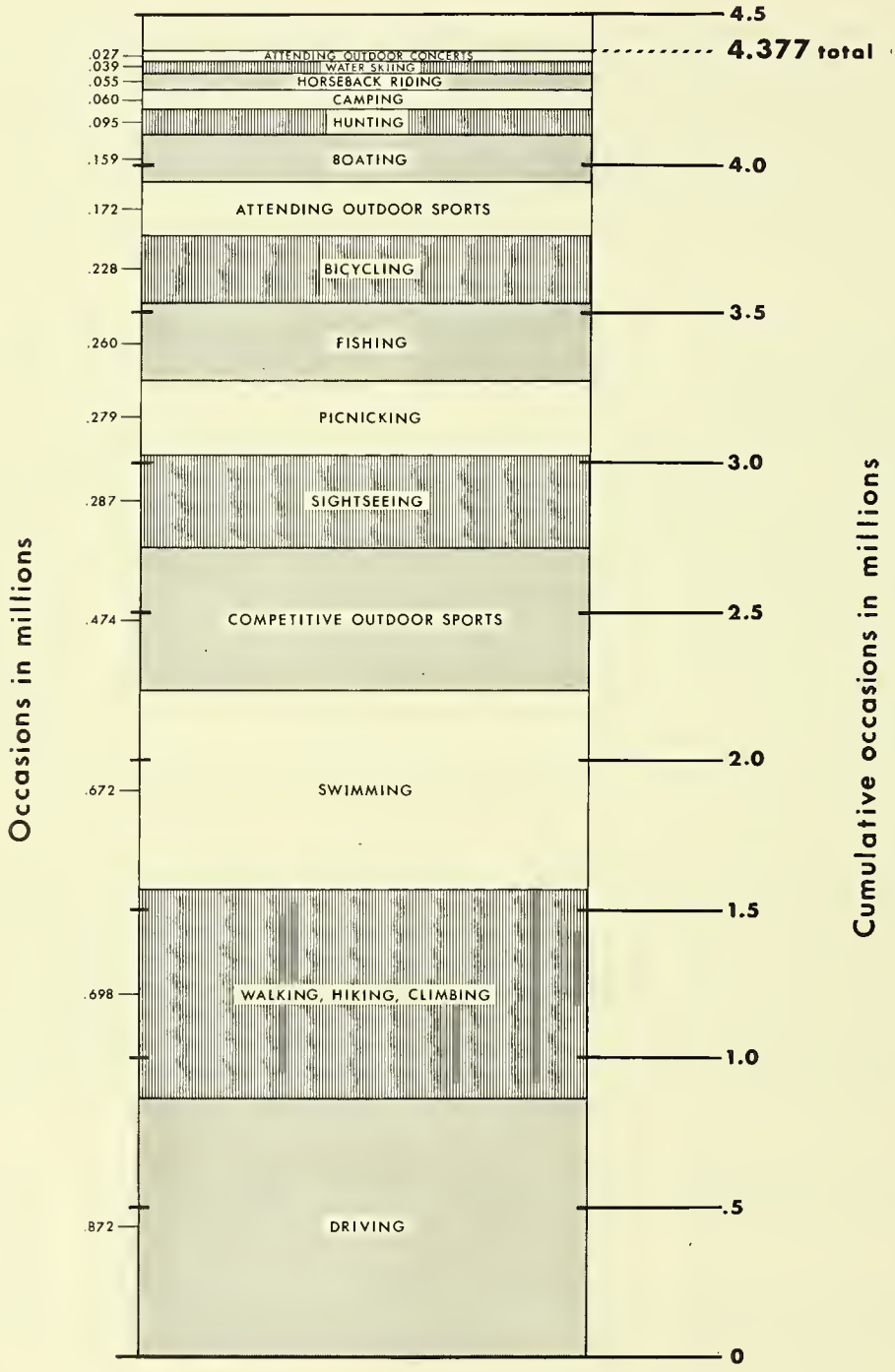
Recreation Participation

In spite of the relatively complex life brought about by pervasive social and economic changes, general preferences for recreational activity remain simple. Since most people live in metropolitan areas and since leisure time is in fact limited, accessible, fairly easy activities are those which head the list.

It can be seen in figure 2 that the most popular activities are pleasure driving and walking, which together account for 42 per cent of total annual recreation activity. Playing games and swimming, activities which require little in the way of preparation or equipment,

FIGURE 2

TOTAL NUMBER OF RECREATION OCCASIONS* IN THE UNITED STATES: 1960



* Persons 12 years of age and over.

Source: ORRRC Report #26, p. 22

are the next most popular pastimes. Sight-seeing, picnicking, fishing, bicycling, and attending outdoor sports events follow; activities that are all simple in demands on talent or equipment. Sports requiring more sophisticated products or a higher degree of skill such as skiing, mountain climbing, and sailing are low on the popularity index.

FACTORS AFFECTING PARTICIPATION

Participation in outdoor recreation activities is affected by several observable characteristics of the population. First, time which has no work demands on it must be available. A long workweek and limited vacation time preclude extensive participation in recreation for those in the labor force. This group includes approximately 40 per cent of the total population; therefore it has a considerable effect on total recreation activity. Although relevant historical data are not directly available, it is clear that participation in recreation has expanded as a result of a declining workweek and longer vacations. The relationship, of course, is not one-to-one, for energy has also been channeled into leisure time, artistic and educational pursuits. Nevertheless, as more leisure time becomes available, much of it will be spent on outdoor recreation.

A clear, positive relationship exists between available leisure and time spent on outdoor recreation. Time for recreation must be accompanied by income necessary to pursue it. These two factors — leisure time and money — have together the strongest effect on participation in outdoor recreation. Figure 3 relates socio-economic characteristics to rates of participation in recreation. As income increases, participation in outdoor recreation generally rises with it. Participation in activities requiring a substantial outlay of money, such as boating, water-skiing, and horseback-riding, are more frequently engaged in by those with higher incomes. The very highest income groups, however, also pursue simple activities such as walking with high frequency.

Levels of income and leisure time are related to other general population characteristics that are in turn correlated with outdoor recreation activity. For example, the related factors of education and occupation have an effect on outdoor recreation. The higher the education, the more active the adult generally tends to be. In terms of the occupational scale, professionals enjoy more recreation than farm workers. However, the relationship does not progress smoothly from the lowest status occupation to the highest.

Age also influences outdoor recreation activity. As age increases, participation tends to decline. This is particularly true in activities requiring considerable amounts of physical exertion, such as water-skiing and horseback-riding. Some activities, such as swimming, fishing, and walking, remain popular throughout life; yet driving for pleasure and sight-seeing are favorite activities for those in the older age groups. As age increases, however, participation in outdoor recreation generally decreases. Participation in recreation does not differ much for men and women who are over 25 years of age. However, among the younger groups men tend to be more active than women.

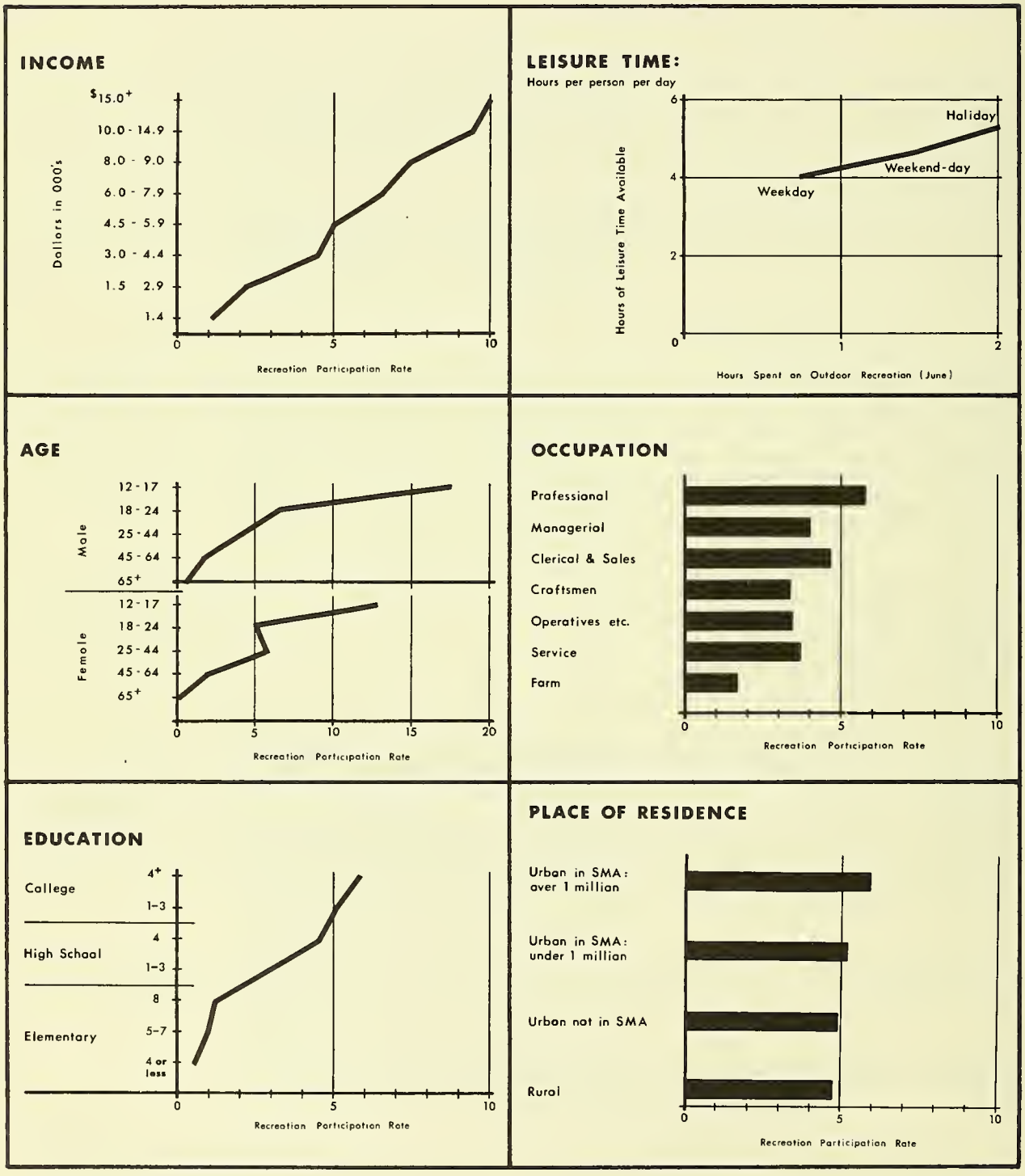
All of the above factors affect recreation participation, yet when the interrelationships among them are separated, available time and income are the most important factors affecting that participation.

Future National Recreation Activity

The socio-economic factors discussed above will combine in the future to affect participation in outdoor recreation in many different ways. Leisure time available to employed persons is expected to increase. The 1960 workweek of 39 hours is expected to decline to 31 by the year 2000, representing a decrease of almost eight hours per week. This is expected

FIGURE 3

FACTORS AFFECTING PARTICIPATION IN OUTDOOR RECREATION



Source: ORRRC Report #26, p.19 (Data refer to swimming during summer) and ORRRC Report #19, p.360

to cause a 32 per cent gain in leisure time actually available to the average employed person. In addition to a shorter workweek, the length of paid vacations is expected to double the current average of two weeks. The number of paid holidays is forecast to increase from about six in 1960 to about ten in the year 2000.

Per capita real income is expected to rise 114 per cent between 1960 and 2000. Median family income, which was $5,100 in 1960, is expected to be $11,100 by the year 2000, an increase of 118 per cent. The general population will also be better educated in 2000. In general, then, socio-economic trends will work to create a wealthier nation and one with more leisure time for outdoor recreation.

The ORRRC study used regression analysis to determine the relationship between each activity and the six socio-economic factors discussed above (Study #26, Chapter 4). In conjunction with independent forecasts of population, income, leisure time, age, education, occupation, and place of residence, these relationships form the basis for forecasting activity in future years. It is assumed that present relationships will hold in the future and that participation will increase or decrease on the basis of a growing population and changing socio-economic characteristics.

The net effect of changes in socio-economic positions will have widely varying effects on the various recreation activities. For example, the net effect of the six factors by the year 2000 is expected to cause a lower participation rate per person for hunting, while participation rates in all other activities increase.

Regardless of the expected trend in individual participation rates, the total amount of recreation will increase in all activities, for there will be more people.

Figure 4 illustrates numerical and proportionate change in recreation activities forecast at the national level. The primary outdoor activities of swimming, competitive outdoor sports, boating and fishing will experience the greatest numerical increases in participation over the years between 1960 and 2000. High rates of change will occur in activities which are now beginning to experience a real gain in popularity, such as water-skiing, camping and boating.

Although it may seem that pleasure driving, sightseeing, and walking are not bona fide outdoor recreation activities, they are nevertheless extraordinarily popular with the American public. This is largely because these activities are easily engaged in and therefore are readily available to the largest segment of the population. These supplementary activities are expected to hold their appeal in future years although more active recreation activities will increase rapidly and in some cases overtake the less active pursuits.

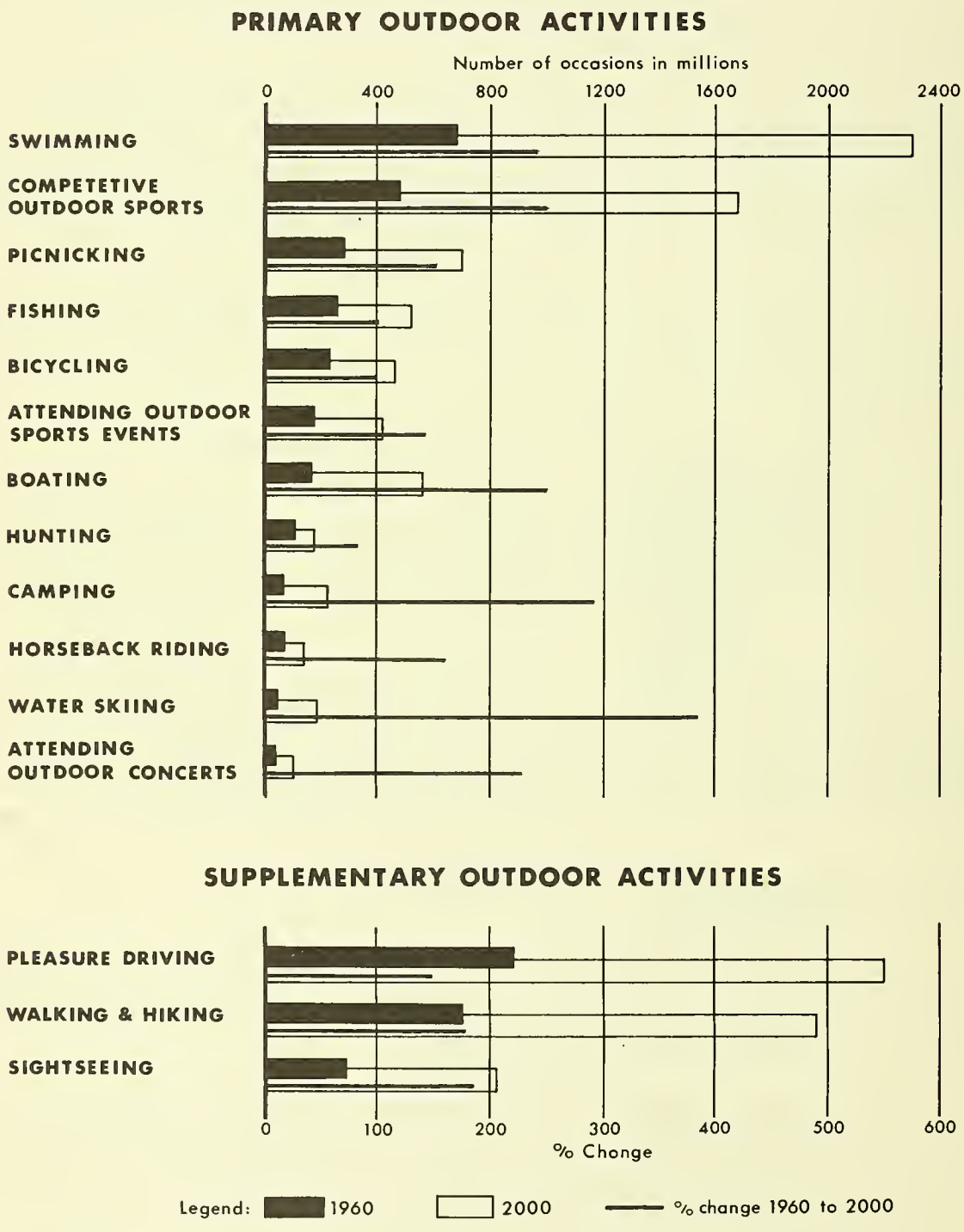
Outdoor Recreation in Massachusetts

Except for the ORRRC Reports, little attention has been given to direct measurement of recreation activity in the United States. Attempts to do so are often cast aside as pseudo-scientific and unrealistic. If, however, we are to use our resources and plan our facilities in such a manner that the greatest good for the largest number of persons is achieved, a systematic approach to recreation must be started.

For this reason, this study has placed considerable reliance on the ORRRC study findings since these data are the first available that objectively treat a broad range of recreation activities. The results are not a mirror portrayal of recreation activity, owing to errors common to all sample survey results. These errors include sampling variability, nonresponse, failure of the respondent to reply accurately, and processing errors. Nevertheless, the usefulness of survey techniques has been adequately demonstrated. The chances are reasonably high that the results of the ORRRC surveys are within acceptable ranges of actual

FIGURE 4

FORECAST TRENDS IN SELECTED OUTDOOR RECREATION ACTIVITIES FOR THE U.S., 1960-2000



Source: ORRRC Report #26 p. 22

behavior (Report #19, p. 105). Therefore, when participation rates for various activities and the resulting numbers of persons recreating in Massachusetts are discussed, we may have confidence that they provide a sound basis for recreation planning.

THE APPROACH TO ESTIMATING DEMAND

In view of the significance of outdoor recreation in our current environment and with knowledge that it will become more important in future years, numerical estimates of recreation activity in Massachusetts and its seven regions have been prepared. These estimates cannot be 100 per cent accurate, but they can provide a basis for understanding future needs. Many factors preclude such a high level of accuracy. In addition to those gaps in the data for the nation mentioned above, there are also many gaps in data at the state and local levels and a total lack of historical time series. Furthermore, forecasting recreation activity is in an early stage of technique development.

In determining present and forecast recreation levels in Massachusetts, it was assumed that the same forces expected to influence behavior in the nation as a whole will also affect Massachusetts. The combined effect of increases in income, leisure time, age structure, occupation, education and place of residence will thus play a similar role in the level of recreation activity in Massachusetts as in the nation.

Recreation participation and demand as discussed here are the result of the combined effect of all of the socio-economic factors discussed above, as well as population levels and Massachusetts' relative attractiveness to people from other states.

The forecasts of recreation in Massachusetts are based primarily on ratios derived from the ORRRC findings. However, the estimates of recreation activity in Massachusetts differ somewhat from those presented in the ORRRC reports. These reports deal with recreation occasions, or activity days and represent activities which were engaged in on separate days. The objective in this study is to plan for activity which would occur in the regions of the State on a day which would be somewhat lower than the peak but higher than average. Therefore, a measure of total recreation days rather than single occasions is required.

Recreation occasions are converted to days on the basis of an estimate of occasions per day for persons recreating near their homes or on vacations, trips, and outings.[1] These two recreation types are dealt with separately throughout the study and are referred to as home-based and away demand. This dichotomy was established because home-based demand

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[1] Definitions: Source: ORRRC Report #19, p. 60.

a) A vacation is the most recent away from home experience considered a vacation by persons 12 and older. If more than one vacation occurred in a season, those occurring before the most recent were considered to be trips.

b) A trip involves being away from home at least overnight. The average trip lasts 2.5 days: To be included the major purpose must be outdoor recreation.

c) An outing involves being away from home for the major part of the day (eight hours on the average) but not overnight.

d) Home-based recreation occurs in less than an eight-hour time span. It represents participation for brief periods at facilities close to home. It is not treated separately by ORRRC either in terms of days or occasions.

is primarily satisfied within the region or community of residence. Municipal facilities, therefore, would be called upon to meet the home-based demand. Persons on vacations, trips, and outings are more likely to seek State facilities since they are larger and more available to the person away from home.

Home-based recreation occurs in less than an eight-hour time span and is generated by residents of Massachusetts. Total home-based recreation days were derived for the regions of Massachusetts by multiplying the regional population by the estimate of recreation days per person.

Recreation demand made on Massachusetts facilities by persons recreating away from home is generated by persons coming into the State, as well as by Massachusetts residents. The method used in estimating away demand in the State as a whole assumed that all recreation demand for vacations and trips generated by the population of the Northeast would be satisfied within the Northeast. Thus, it is assumed that an out movement for recreation purposes is canceled by an in movement, within the Northeast. Total vacation and trip days in the Northeast were derived by multiplying the population by vacation and trip lengths.

The total number of vacation days expected to take place in the Northeast in the base year 1960 were distributed to the various states on the basis of the Census distribution of seasonal homes. Seasonal homes provide one of the few available indices of the comparative attractiveness of an area to vacationists. This distribution is presented in Figure 5 and conforms closely to our knowledge of popular vacation areas. Trips were distributed to states in the Northeast in the same manner as vacations, except that motels and hotels served as the distributing factor.

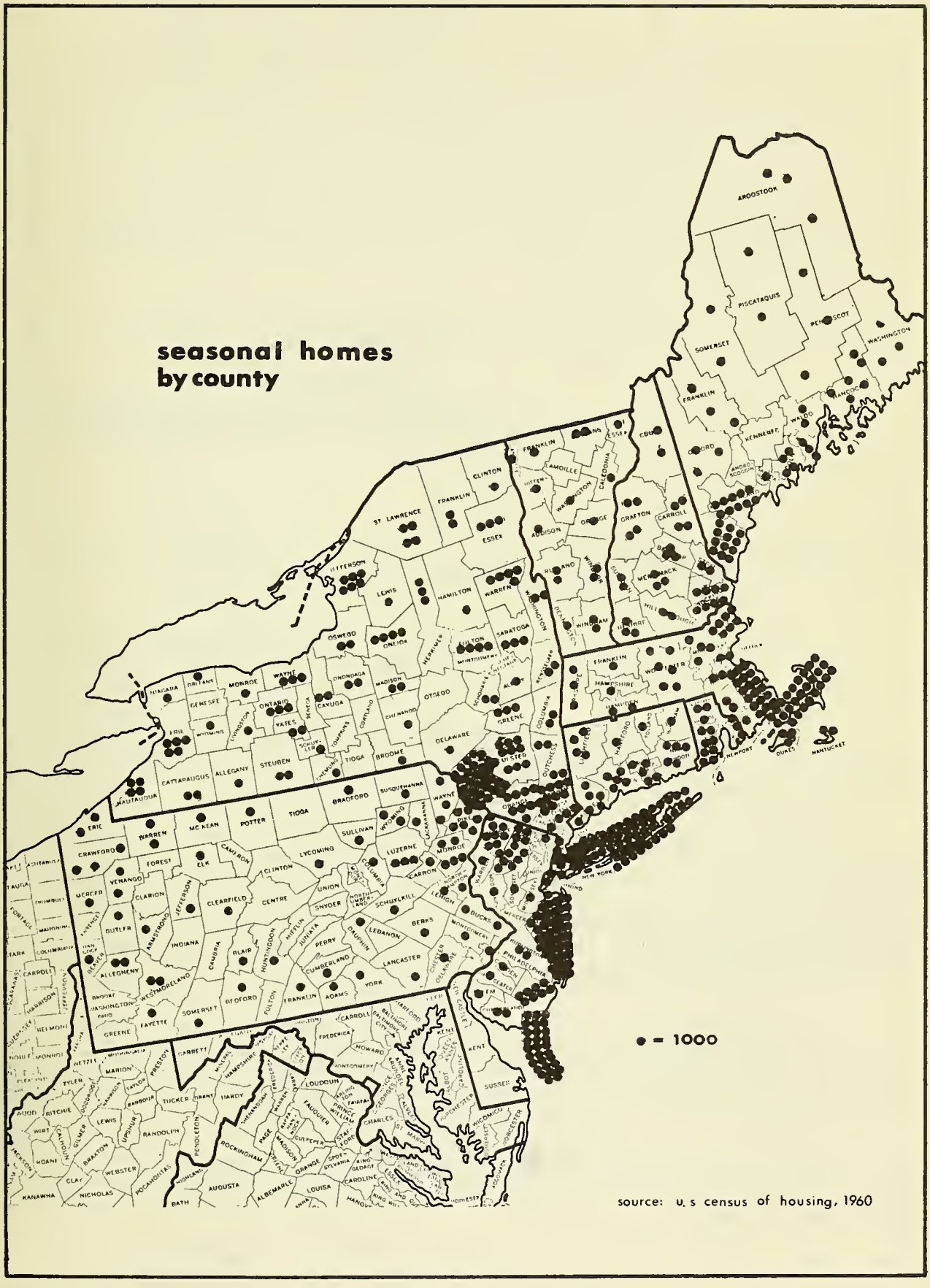
An outing, involving more than eight hours away from home and no overnight stay, could cross regional boundaries within the state. At the state level, however, outings are probably a function of the resident population; state boundary crossing therefore can be assumed to cancel out, particularly since the average outing involves only 26 miles in one direction. Thus the total number of outings in Massachusetts is represented by state level population applied to outing days per person.

Through the above procedures it was possible to estimate the total number of vacation, trip and outing days which took place in Massachusetts in 1960. These were allocated to each region of the State on the basis of the regional distribution of seasonal homes.

The total number of days of recreation experienced in Massachusetts provides a guide to understanding patterns of demand. However, this type of data cannot be used to provide the capacity requirements necessary for planning recreation facilities, which must be designed to accommodate a certain number of people at one time. Facilities should be provided to meet demand on a day which is lower than the most popular summer holiday but higher than an average week day. A peaking factor was determined which would reflect this "median" position. The proportion of recreation in the peak season (summer for most activities) that occurred on a typical weekend day was computed using attendance data for State and local recreation facilities (ORRRC Report #1, pp. 47-49). This factor was applied to total recreation days for each activity during the appropriate peak season for that activity, to derive the number of persons recreating on a typical weekend day in the peak season.

Home-based recreation demand was forecast on the basis of the ORRRC expected participation ratios (adjusted to home-based recreation days), in conjunction with population forecasts for Massachusetts and its seven recreation regions. Future recreation occurring away from home was based on estimates of vacation, trip and outing days, as well as Northeast population forecasts. The same regional distributing and peaking factors were used in both the forecast and base years. A detailed description of the method used is presented in the Appendix.

FIGURE 5


seasonal homes
by county
● = 1000
source: u. s census of housing, 1960

PATTERNS OF RECREATION ACTIVITY

In Massachusetts, in the next thirty-five years more than a doubling of recreation activity is expected. This will be true for both recreation taking place near home and that occurring away from it. In the State as a whole, however, the two types do not occur with equal frequencies. Recreation which occurs near home is far more frequently engaged in than that which takes place on vacations, trips and outings. Our analysis indicates that of the 2,600,000 persons who engaged in outdoor recreation on a peak season weekend day in 1960, 70 per cent were recreating near home. This proportion is expected to remain fairly constant in the future. This high proportion is largely a function of accumulation of the greater amounts of time available in shorter spans, as opposed to time available for more extended vacations or trips. While recreation taking place away from home occurs during a longer time period, it is possible to participate in it less frequently than recreation which can take place near home.

TABLE 3: PEAK SEASON RECREATION DAYS PER PERSON, 1960, 1970 and 2000.

	Days Per Person			Per Cent Change	
	1960	1970	2000	1960-1970	1970-2000
Home-based Days	14.59	16.22	20.61	+ 11 %	+ 27 %
Away Days	7.50	8.56	11.40	14	33
TOTAL Days	22.09	24.78	32.01	12	29

Source: ORRRC Report #26 and Edwards and Kelcey.

All of the Massachusetts regions do not exhibit the same pattern of division between home-based and away activity nor, of course, do the same amounts of recreation take place in all regions. This is illustrated in Figure 6.

Conforming to the distribution of the population throughout the State, home-based demand is greatest in the Boston Region, followed by the Central Highlands (Worcester), the Pioneer Valley, Southeastern Massachusetts, the Merrimack Valley, the Berkshires, and Cape Cod and the Islands, in the order listed.

The pattern is quite different for recreation occurring away from home, most of which occurs in the coastal regions of the State. Cape Cod and the Islands display the highest intensity of recreation use for vacations, trips and outings. The Merrimack Valley, Boston and Southeastern Massachusetts regions follow, but are must less intensively used for away recreation than the Cape Cod Region. The Berkshires, with far less total activity than the Coastal areas, offer a vacation atmosphere which attracts a large amount of activity in relation to resident population. Here, almost as much activity is generated during the peak season by persons recreating away from home as by residents of the area.

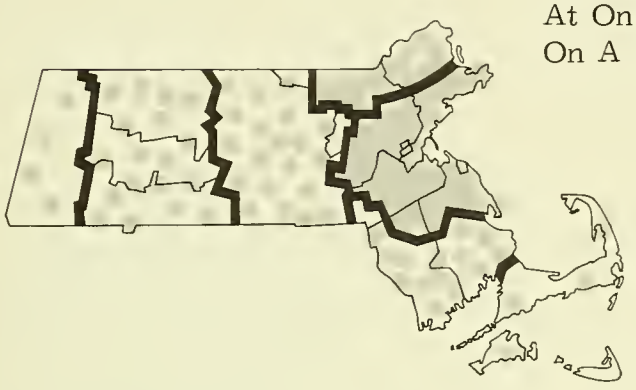
When engaging in more active outdoor recreation, persons on vacations, trips and outings in Massachusetts prefer swimming, fishing, picnicking and boating in that order. Most of these activities will show considerable gains in future years and continue to hold the highest ranks on the popularity list. In addition, rates of expansion will be rapid in camping, competitive sports and water-skiing (see Figures 7-22).

Apart from swimming, which has broad appeal, persons recreating near their homes prefer the more casual activities and those which can be engaged in for short periods of time. Thus, the most popular primary activities are competitive sports, swimming, bicycling and

FIGURE 6

1960

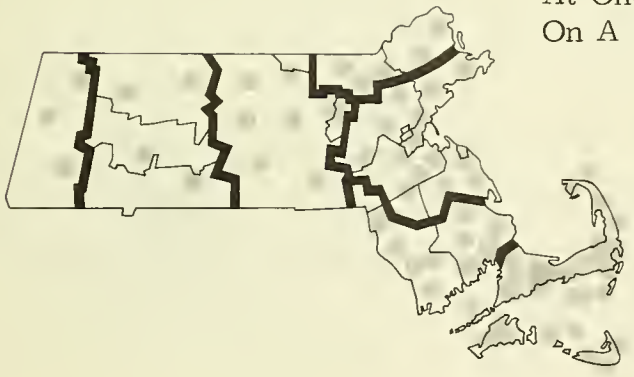
2000



The Number of People Recreating,
At One Time, Near Home
On A Peak Season Weekend Day

1960

2000

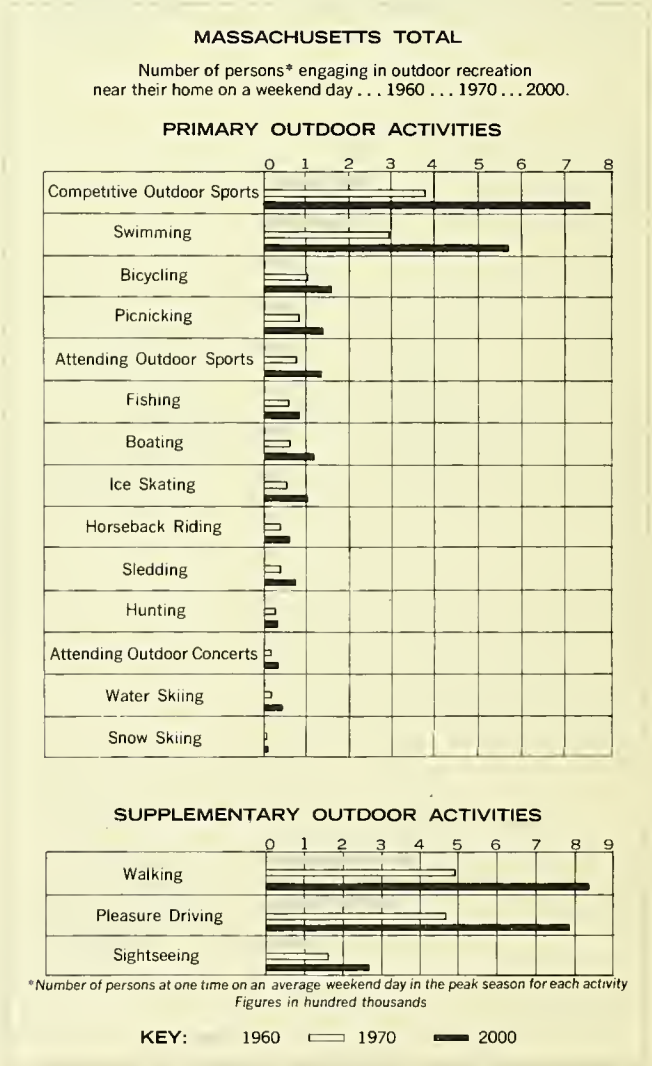


The Number of People Recreating,
At One Time, Away From Home
On A Peak Season Weekend Day

Each dot = 25,000 people

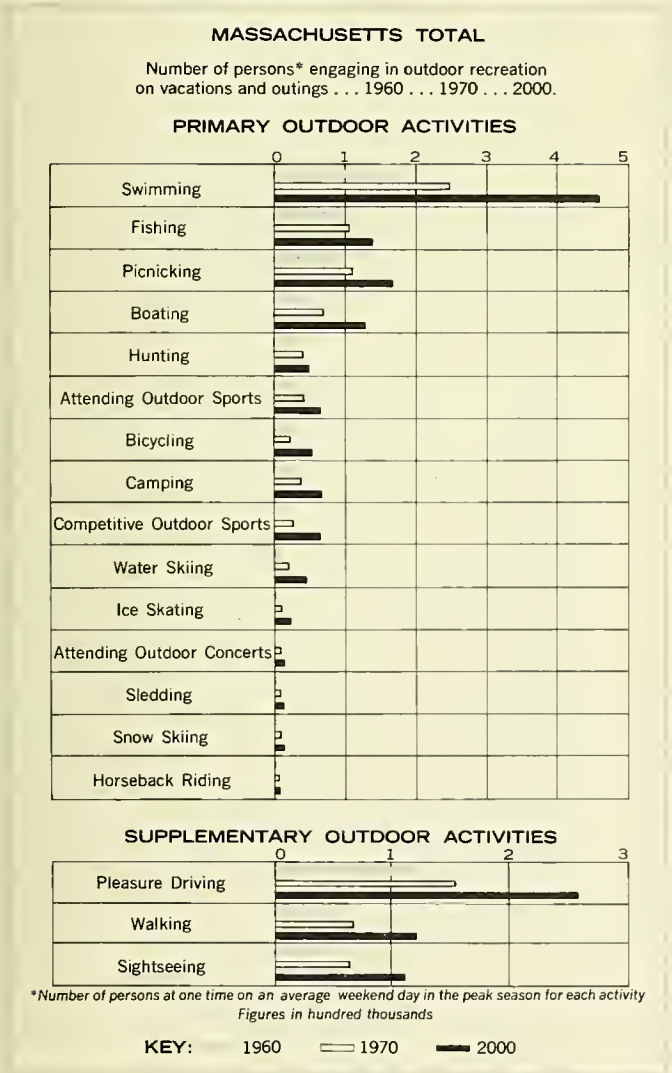
picnicking. As might be expected, the supplementary activities of walking, driving, sightseeing also hold higher ranks on the popularity list for persons recreating near home than for those on vacations, trips and outings.

FIGURE 7


MASSACHUSETTS TOTAL
Number of persons* engaging in outdoor recreation near their home on a weekend day . . . 1960 . . . 1970 . . . 2000.
PRIMARY OUTDOOR ACTIVITIES
0 1 2 3 4 5 6 7 8
Competitive Outdoor Sports
Swimming
Bicycling
Picnicking
Attending Outdoor Sports
Fishing
Boating
Ice Skating
Horseback Riding
Sledding
Hunting
Attending Outdoor Concerts
Water Skiing
Snow Skiing
SUPPLEMENTARY OUTDOOR ACTIVITIES
0 1 2 3 4 5 6 7 8 9
Walking
Pleasure Driving
Sightseeing
*Number of persons at one time on an average weekend day in the peak season for each activity
Figures in hundred thousands
KEY: 1960 1970 2000

In summary, the future will bring considerable increases in recreation activity in Massachusetts. These gains will be caused primarily by higher incomes and more leisure time, combined with population growth. The greatest numerical gains are expected in the activities which now rank high on the popularity list, although the accompanying illustrations show that the total amount of recreation in all activities will increase. The important fact in planning for the future is that recreation activity will more than double in Massachusetts in the next thirty-five years, and that two-thirds of all recreation will take place near home.

FIGURE 8

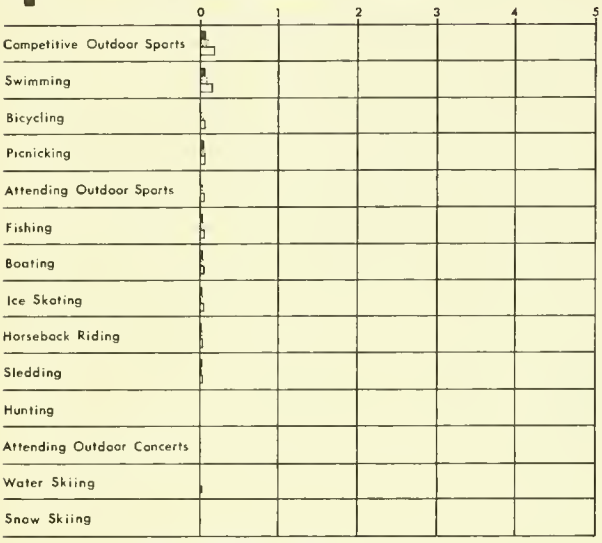


NUMBER OF PERSONS* ENGAGING IN OUTDOO

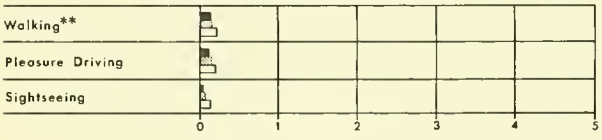
at home

Region 1

PRIMARY OUTDOOR ACTIVITIES*

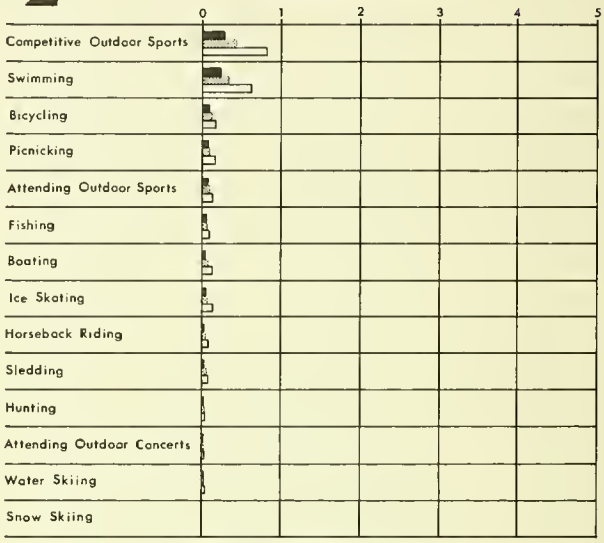


SUPPLEMENTARY OUTDOOR ACTIVITIES*

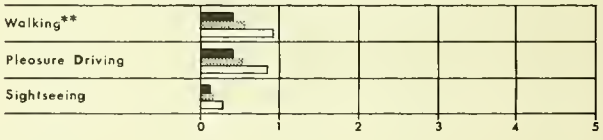


2

PRIMARY OUTDOOR ACTIVITIES*

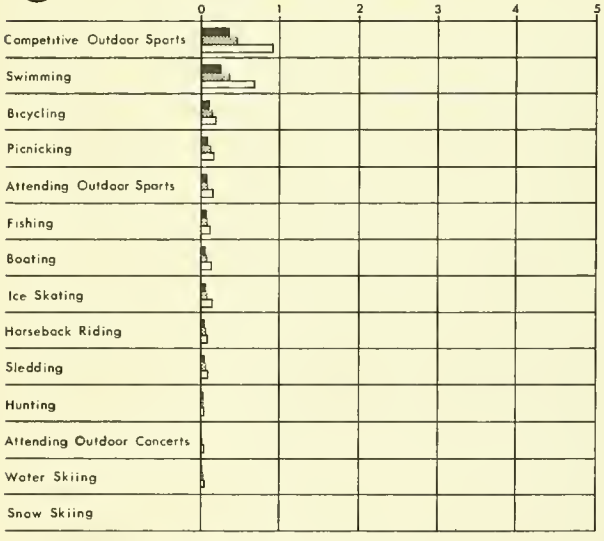


SUPPLEMENTARY OUTDOOR ACTIVITIES*

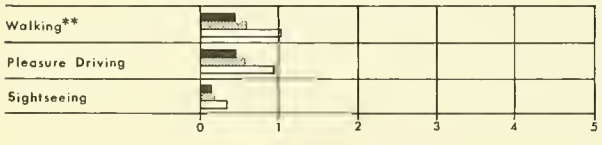


3

PRIMARY OUTDOOR ACTIVITIES*

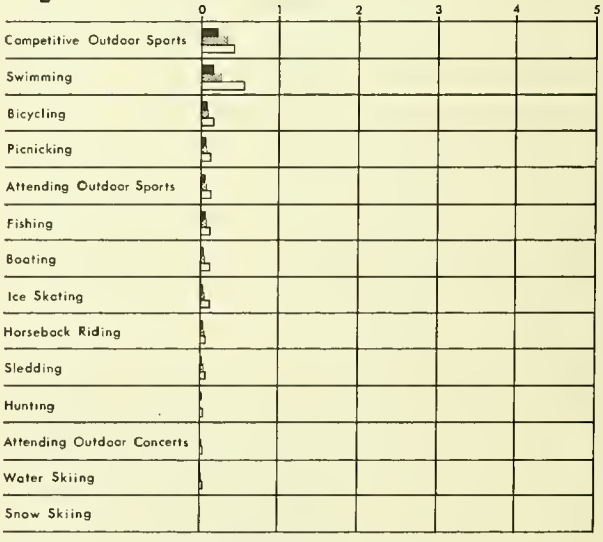


SUPPLEMENTARY OUTDOOR ACTIVITIES*

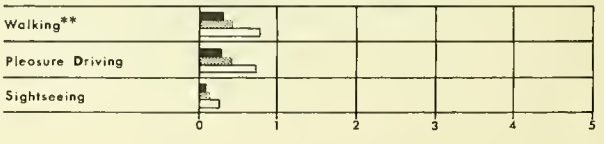


4

PRIMARY OUTDOOR ACTIVITIES*



SUPPLEMENTARY OUTDOOR ACTIVITIES*

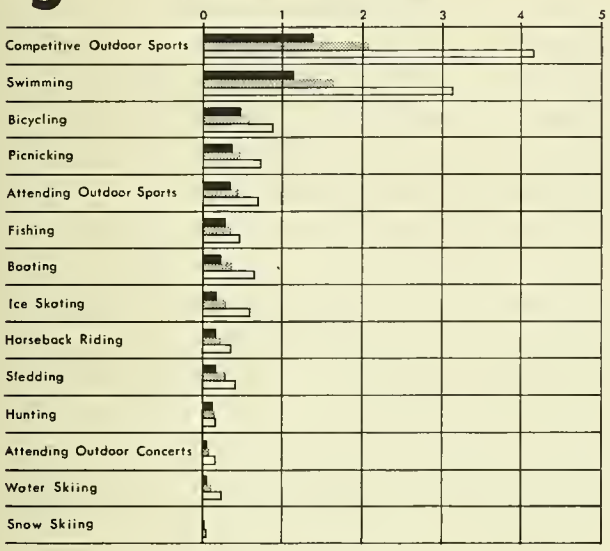


:CREATION NEAR HOME - 1960 - 1970 - 2000

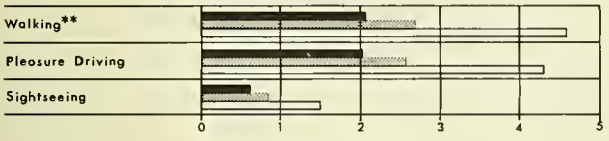
at home

5

PRIMARY OUTDOOR ACTIVITIES*

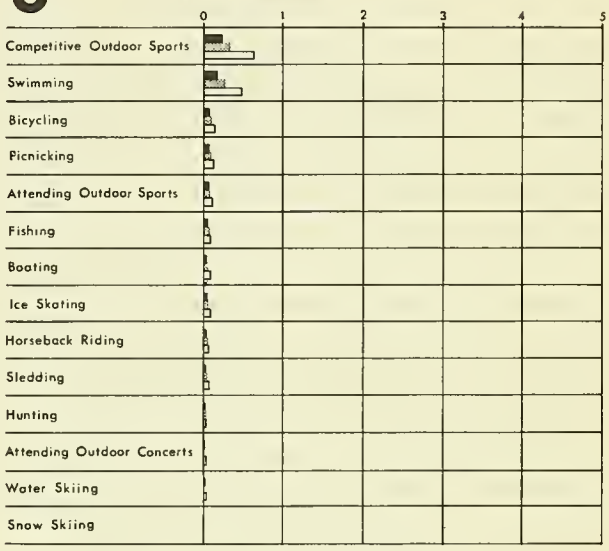


SUPPLEMENTARY OUTDOOR ACTIVITIES*



6

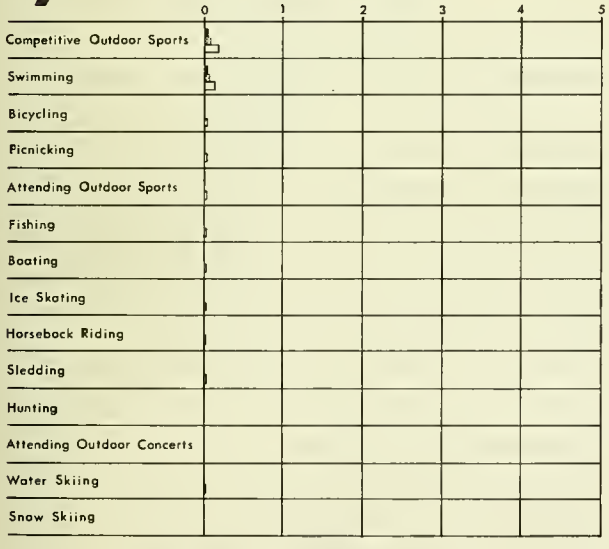
PRIMARY OUTDOOR ACTIVITIES*



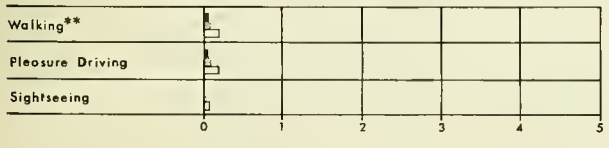
SUPPLEMENTARY OUTDOOR ACTIVITIES*

7

PRIMARY OUTDOOR ACTIVITIES*



SUPPLEMENTARY OUTDOOR ACTIVITIES*



KEY:

1960 ■ 1970 ▒ 2000 □

• Figures in hundred thousands.

*Number of persons at one time on an average weekend day in the peak season for each activity; less than 1000 persons not shown.

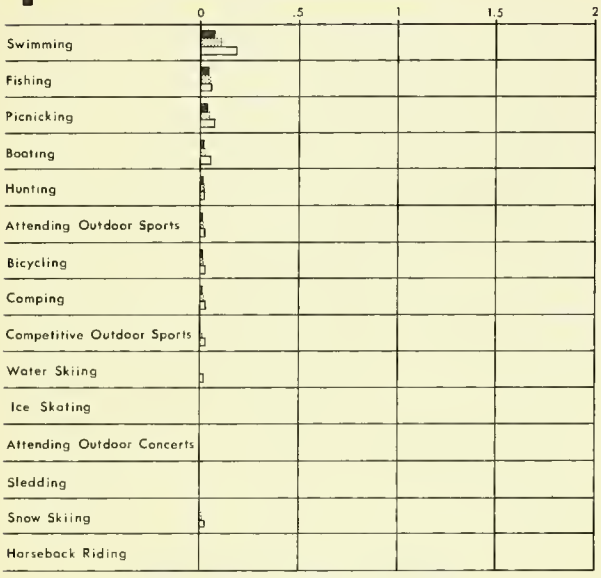
**Includes hiking and climbing.

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECRE

away

Region 1

PRIMARY OUTDOOR ACTIVITIES*



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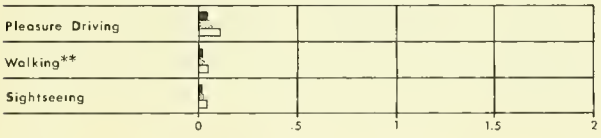
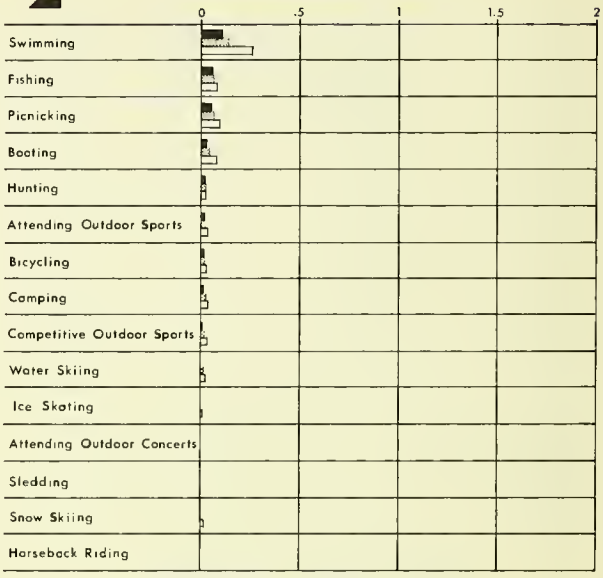
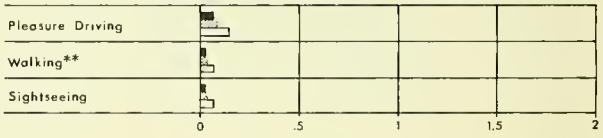


2

PRIMARY OUTDOOR ACTIVITIES*



SUPPLEMENTARY OUTDOOR ACTIVITIES*



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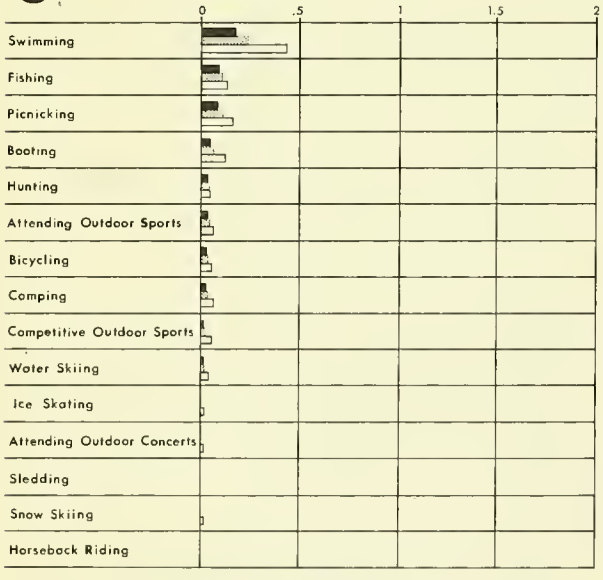

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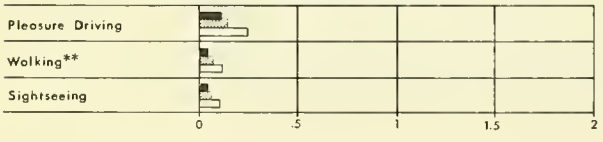

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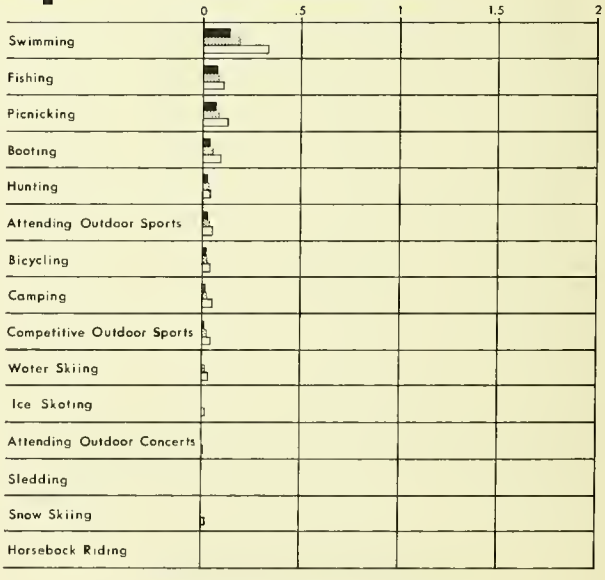

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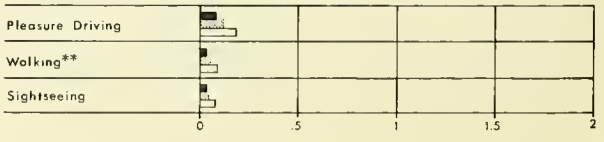

ON ON VACATIONS, TRIPS & OUTINGS 1960-1970-2000

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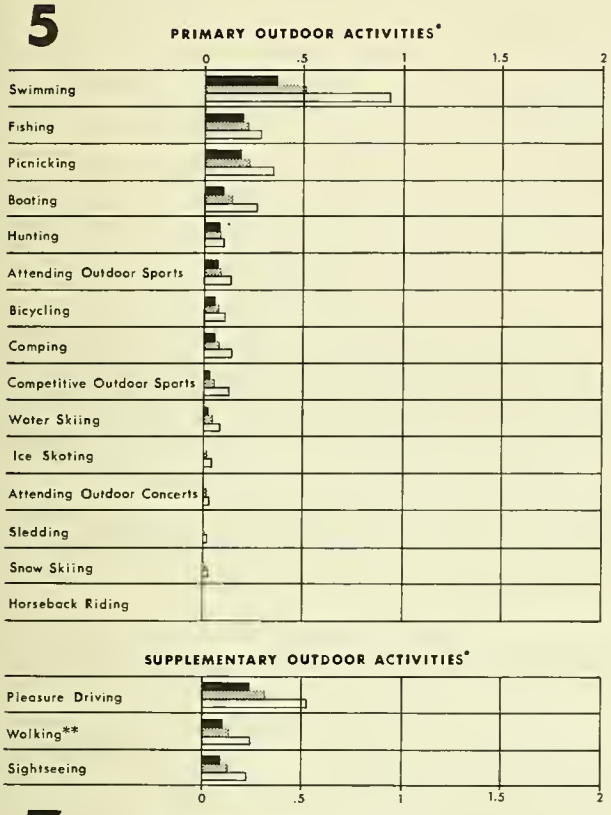

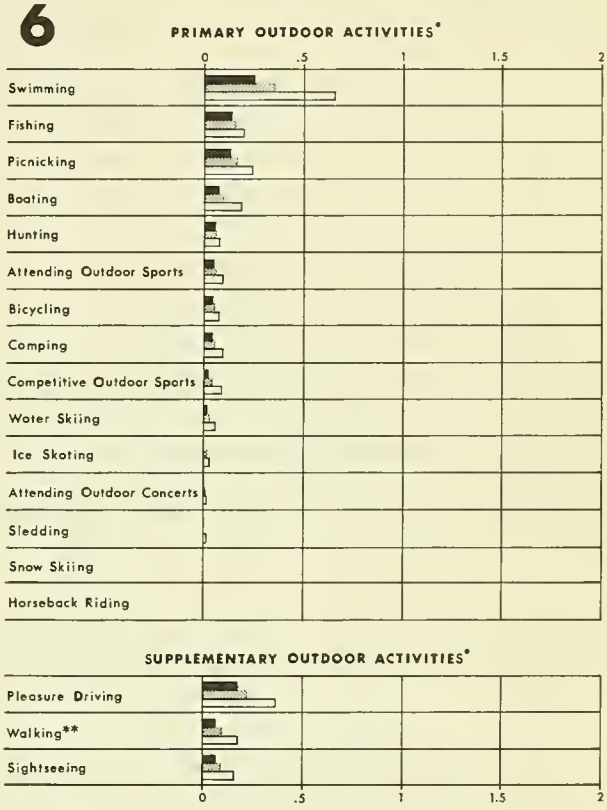

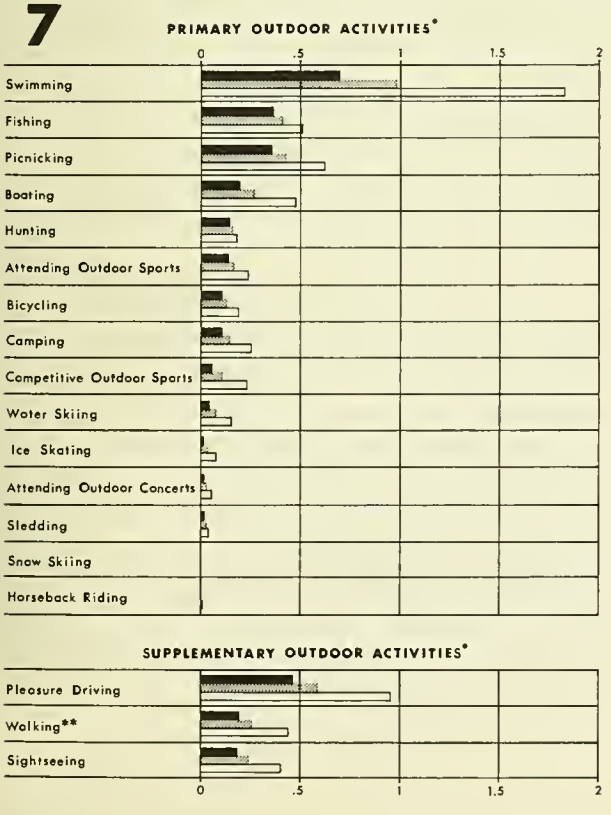

KEY:
1960 ■ 1970 ▒ 2000 □

• Figures in hundred thousands.

*Number of persons at one time on an average weekend day in the peak season for each activity; less than 1000 persons not shown.

**Includes hiking and climbing.

Chapter IV

THE SUPPLY

Introduction

Recreation land and facilities in Massachusetts must be viewed from several vantage points in order to develop a dimensional knowledge of the meaning of supply. A list of the number of acres of land devoted to outdoor recreation is misleading, for land can be developed to provide facilities for widely differing numbers of persons and activities. In addition a certain supply may exist but may be relatively inaccessible, thus removing it from the functional category of supply. Determining the total stock of recreation lands and facilities in Massachusetts is thus clear-cut in concept but somewhat more difficult in practice.

Classification of Recreation Land and Activities

The Outdoor Recreation Resources Review Commission has developed a system of classifying outdoor recreation resources that clarifies the meaning of such designations as "High Density" and "Natural Environment" and provides a framework for recreation management with particular types of areas managed for definite recreation uses. This resource classification system facilitates the general analysis by identifying the substantial differences while maintaining latitude for the multitude of variances. The system has been adopted by the U.S. Bureau of Outdoor Recreation and is used throughout this study.

Classes I, II, III, and V are a graduated series from the most densely used area to the least densely used area. Classes IV and VI are not part of the series, but are unique areas — one natural, the other man-made. The six classes are:

Class I - High density recreation areas: intensively developed and managed for mass use. Examples: Revere Beach, the MDC ice skating rinks and swimming pools.

Class II - General outdoor recreation areas: medium-density development for a wide variety of uses. Examples: Breakheart Reservation, Horseneck Beach.

Class III - Natural environment areas: suitable for low-density recreation, often in combination with other uses. Examples: Savoy Mountain State Forest, Crane's Beach.

Class IV - Unique natural areas: outstanding scenic splendor, natural wonder, or scientific importance. Examples: Great Outer Beach at Cape Cod, Dinosaur Footprints, Mount Greylock.

Class V - Primitive areas: undisturbed, roadless, characterized by natural, wild conditions, including but not limited to wilderness areas. Massachusetts has no primitive areas.

Class VI - Historic and Cultural sites: sites of major significance — either local or national. Massachusetts, in spite of its small area, has perhaps a greater number of these than any other state except New York. Examples: Plymouth Rock, Sturbridge Village, the U.S.S. Constitution, Tanglewood.

In many cases, a park, forest, or other reservation includes two or more resource classes. It is, in effect, "zoned" for the different classes, based upon physical features and recreation needs.

In its studies the ORRRC also identified twenty-two major outdoor recreation activities engaged in by the general public. The Massachusetts inventory covers this complete range of activities on an activity-by-activity basis.

The total supply for outdoor recreation consists of public and private facilities and resources. The public sector of the supply is considered at three levels. First, the recreation areas of regional significance in the states of the Northeast are analyzed. Second, regionally significant areas in Massachusetts are analyzed for the seven planning regions. Finally, consideration is given to the inventory needs in the municipal sector. The contribution of the private sector in those activities for which data are readily available is also evaluated.

Recreation Supply in the Northeast

In the seven states of the northeast, the size of publicly owned areas of state and regional significance and their attendance were tabulated by major resource class and compared on the basis of the U.S. Bureau of Outdoor Recreation nationwide survey summary. These are essentially state and federally owned areas. The only municipal facilities included are those of major importance such as the New York City Ocean Beaches. Table 4 summarizes these areas by state and resource class. Table 5 presents annual visits per acre by resource class for each area, and Table 6 compares the states by average per capita use of recreation areas. Analysis of these data reveals the following:

a) Massachusetts and Rhode Island have below average per capita use, below average acreage per capita, and lower than average intensity of development. While Massachusetts ranks second in number of residents per acre of public recreation land, it ranks fifth in number of visits per resident to this land. It should also be noted that Massachusetts has above average intensity of use of its recreation areas in all three of the major resource classes.

b) Connecticut has average use per capita on much smaller than average acreage. It has a much higher percentage of high density development enabling it to sustain average use at lower levels of intensity than Massachusetts.

c) New York has above average use per capita, above average acreage and average development. It sustains a very high intensity of use at its ocean beaches, accounting for the high use per acre in the high density class. New Hampshire and Vermont both derive average per capita use from above average acreage with lower than average development intensity. Maine, which has above average acreage, has below average use and development.

While a regional average should not be regarded as a goal, it serves as a basis for comparison. Observation of the condition of many of Massachusetts' public recreation areas indicates that the intensity of use is, in fact, too high. This, coupled with the below average

TABLE 4: ACRES OF LAND AND WATER BY RESOURCE CLASS: Regional Public Recreation Areas in Selected Eastern States, 1965.

State	Resource Class: Acres in Thousands							Per Cent of Total State Area
	High Density	General Outdoor	Natural Environment	Unique Natural	Primitive	Historical Cultural	TOTAL All Classes	
Massachusetts								
Number	1.7	38.9	244.9	8.5	0	.6	294.6	5.9 %
Per cent	.6	13.2	83.1	2.9		.2	100.0 %	
Connecticut								
Number	8.5	23.5	144.5	0.1	0	0	176.6	5.4
Per cent	4.8	13.3	81.9				100.0 %	
Maine								
Number	0	37.0	119.6	204.0	0	.1	360.6	1.7
Per cent		10.3	33.2	56.5			100.0 %	
New Hampshire								
Number	1.1	23.9	736.1	13.3	0	.1	774.6	13.0
Per cent		3.1	95.1	1.7			100.0 %	
New York								
Number	4.6	245.2	3,532.3	0	0	6.8	3,788.8	12.0
Per cent	.1	6.5	93.2			.2	100.0 %	
Rhode Island								
Number	1.8	5.7	37.0	.1	0	.1	44.7	5.7
Per cent	4.0	12.8	82.9				100.0 %	
Vermont								
Number	.3	7.7	395.3	.1	0	.2	403.5	6.7
Per cent		1.9	97.9				100.0 %	
TOTAL								
Number	18.0	381.9	5,209.7	226.1	0	7.9	5,843.4	7.9
Per cent	.3	6.5	89.2	3.9		.1	100.0 %	

Source: U.S. Bureau of Outdoor Recreation, 1965 National Inventory of Public Recreation Land, and Edwards and Kelcey.

TABLE 5: ANNUAL VISITS PER ACRE: To Regional Public Recreation Areas in Selected Eastern States, 1965.

State	Resource Class						
	High Density	General Outdoor	Natural Environment	Unique Natural	Primitive	Historic Cultural	Average Visits All Classes
Massachusetts	8,500	290	14	7	0	na	74
Connecticut	1,299	272	4	372	0	0	103
Maine	0	112	6	0.3	0	3,516	15
New Hampshire	2,300	24	1	116	0	115	7
New York	19,000	160	2	0	0	300	36
Rhode Island	564	161	65	na	0	43	98
Vermont	585	72	5	na	0	272	7
Average	6,700	154	3.3	7.5	0	320	34

na: Not Available

Source: U.S. Bureau of Outdoor Recreation, 1965 National Inventory of Public Recreation Land, and Edwards and Kelcey.

TABLE 6: RESIDENTS PER ACRE OF RECREATION LAND, VISITS PER RESIDENT & POPULATION DENSITY: For Regional Public Recreation Areas in Selected Eastern States, 1965.

State	Residents Per Acre of Public Recreation Land		Visits to Public Recreation Areas Per Resident		Residents Per Acre: State Total	
	Rank	Number	Rank	Number	Rank	Number
Rhode Island	1	19.2	7	5.1	1	1.1
Massachusetts	2	17.4	5	5.9	2	1.0
Connecticut	3	14.4	3	7.2	3	.78
New York	4	4.4	2	8.2	4	.53
Maine	5	2.7	6	5.4	7	.05
Vermont	6	1.0	4	6.7	6	.07
New Hampshire	7	0.8	1	9.0	5	.10
Average		4.7		7.4		.37

Source: U.S. Bureau of Outdoor Recreation, 1965 National Inventory of Public Recreation Land, and Edwards and Kelcey.

per capita use, would seem to indicate that Massachusetts is not keeping up with development demands for public recreation facilities.

Recreation Supply in Massachusetts

The level of demand by people on vacations, trips and outings for outdoor recreation (the away demand) is considered in this study to be the primary concern of federal, state and regional agencies. A complete inventory of recreation areas managed by such agencies in Massachusetts was made using the B. O. R. Resource Classification system and list of major activities.[1]

Data on each of the twenty-two activities and the five resources classes existing in Massachusetts were compiled from the agency records; a list was thereby produced of total acreage and capacity by resource class, in each region, for each activity. In addition, total area and instant capacity by resource class for each of the four seasons were available for analysis.[2]

While these data were felt to be too detailed for inclusion in this report, a summary of the peak season instant capacity and total area, by resource class, of the public recreation facilities in each of the seven regions is shown in Table 7.

The areas of public and quasi-public outdoor recreation lands existing in both 1957 and 1965 are tabulated by agency in Appendix A, including a summary of total regional change during the period. The total capacity by region for each activity is recorded in Appendix B.

LAND RESOURCES

As can be seen in Table 7 natural environment land dominates the supply of recreation area in Massachusetts as a whole. Areas which have been developed for general outdoor use at a medium density level follow in importance. These form only one-sixth the area devoted to the Natural Environment class. Less than 1 per cent of all land available for recreation purposes is in the High Density category; that is, land which is intensively developed and managed for mass use. Most of the publicly held land is in the western part of the State and one-half of the natural environment land is found in the Berkshires and the Pioneer Valley, Regions I and II. The only land developed for high density use is found in the Boston region. The Berkshire region with a large share of the State's total land thus has a relatively low developed capacity, while the Boston Region with its comparatively small amounts of public land has developed these quite intensively to handle the larger number of people demanding outdoor recreation in this Region.

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[1] Two adjustments of the data from this inventory were required to evaluate the supply in terms of meeting the away demand. In Region VII the capacity of the town-owned beaches greatly exceeds the swimming demand generated by the permanent residents. Since the town beaches constitute 96 per cent of the public swimming capacity in this region, the excess capacity must be added to that provided by the statewide agencies to obtain a true measure of the supply. Conversely, because the demand for swimming far exceeds the supply in Region V, the Metropolitan District Commission beaches were assumed to be available only to nearby residents engaging in at home recreation.

[2] A copy of the inventory form used to record and assemble the data is included in Appendix A.

There is further regional variation in developed capacity within resource classes as illustrated in Table 7. The capacity per acre of natural environment area in Region V is more than ten times that of Region I. In the general outdoor class the variation is not as great, except in Region VI where the supply is dominated by large ocean beaches having high capacity per acre. This results in an unusually large average capacity for this region. This last example illustrates the effect that the variety of activities can have on average values, because capacity per acre varies greatly from one activity to another. Nonetheless, high average capacity is generally indicative of a desirable situation. The activities expected to be in highest demand in the peak season (swimming, picnicking, fishing and boating) are also those which have a relatively high capacity per developed acre in each resource class. However, large acreages not so intensively developed are also necessary to fulfill the demand for the other activities.

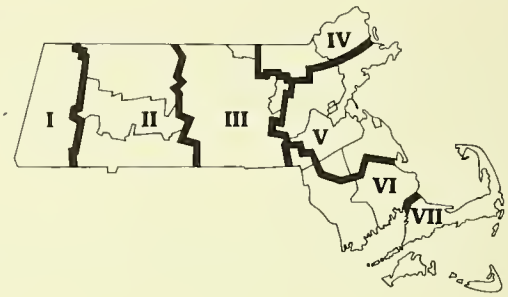


TABLE 7: ACREAGE AND CAPACITY OF PUBLIC RECREATION LAND IN MASSACHUSETTS available to meet "away" demand, 1965 by Resource Class and Region.

Region	Resource Class						TOTAL	
	High Density		General Outdoor		Natural Environment**			
	Acreage	Capacity*	Acreage	Capacity*	Acreage	Capacity*	Acreage	Capacity*
I			1,899	6.00	78,615	0.05	80,514	0.25
II			6,752	3.00	61,959	0.15	68,711	0.39
III			11,643	2.00	32,402	0.17	44,045	0.68
IV			4,302	7.00	6,548	0.23	10,859	2.80
V	1,455	60.00	9,956	7.00	31,384	0.60	42,295	4.60
VI			1,095	33.00	17,142	0.35	20,237	2.10
VII			3,936	4.50	23,309	0.46	27,245	0.90
Massachusetts	1,455	60.00	39,083	5.50	253,359	0.20	294,019	1.30

*Capacity is persons per acre in peak season and represents the number of persons who can be accommodated at one time.
**Natural Environment includes 8,466 acres of Unique Natural Areas.

Source: U.S. BOR 1965 National Survey of Recreation Areas and Agency records.

WATER RESOURCES

In addition to the public areas specifically designated for recreation, the aggregate supply for water-oriented activities includes the Great Ponds, navigable streams, coastal waters and public reservoirs. Availability to the general public of these recreation resources is limited in part by the degree of public access provided. In only a few cases does a permanently guaranteed right-of-way prevail. Unfortunately information describing the number of people or boats that can be accommodated is not generally available, severely limiting our analysis.

Great Ponds - Compiled from published information for fishermen. Table 8 shows the estimated acreage of Great Ponds in Massachusetts recreation regions. These are legally open to the general public for "fishing and fowling," but often have no right-of-way to provide access. Therefore, only abutting property owners can use them.

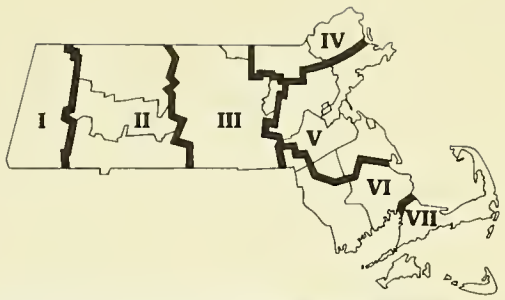


TABLE 8: MASSACHUSETTS GREAT PONDS: Number and Acreage by availability of Access and Region.

Region	Total		With Public Access*		With Restricted Access**	
	Number	Acreage	Number	Acreage	Number	Acreage
I	86	7,747	14	185	37	4,625
II	97	7,695	17	874	44	3,321
III	110	18,221	12	1,147	45	12,445
IV	53	5,318	4	114	31	3,509
V	141	15,659	13	2,403	87	9,112
VI	185	20,836	12	395	118	15,482
VII	83	7,633	49	5,258	16	1,483
Massachusetts	755	83,109	121	10,376	378	49,977

* Only 35 of these are permanently established.

** Restrictions such as shore fishing only, town residents only, private launching facilities only.

Source: Massachusetts Division of Fisheries and Game. Only 251 have been legally established by surveys of the Department of Public Works.

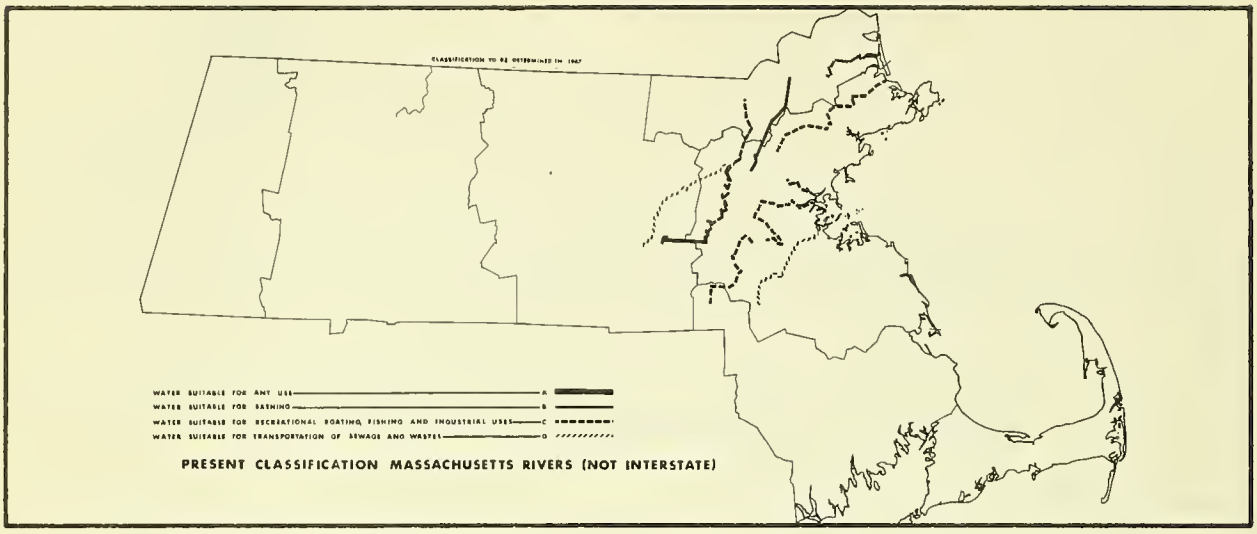
Rivers and Streams - The Massachusetts Division of Fisheries and Game estimates that 13,000 acres of water on some 6,700 miles of named streams in the Commonwealth are potentially fishable. These have outstanding potential for meeting recreation demands because they are distributed in every city and town throughout the Commonwealth. This potential is not being realized, however, because most of this water is inaccessible, or accessible only by boat or with great difficulty due to riparian ownership of the banks of streams.

In addition to being inaccessible, many miles of Massachusetts rivers and streams are polluted to the extent that they have no recreational value, little aesthetic value, limited industrial value and are used largely for the transportation of sewage and waste. Such conditions constitute hazards to public health. Figure 23 illustrates the present water quality and the proposed water quality thus far established by the New England Interstate Water Pollution Control Commission and the Department of Public Health in the case of the non-interstate streams. While this program will go far toward providing cleaner water, it can be seen that pollution would still be permitted in some areas and less than half of the streams would be suitable for swimming.

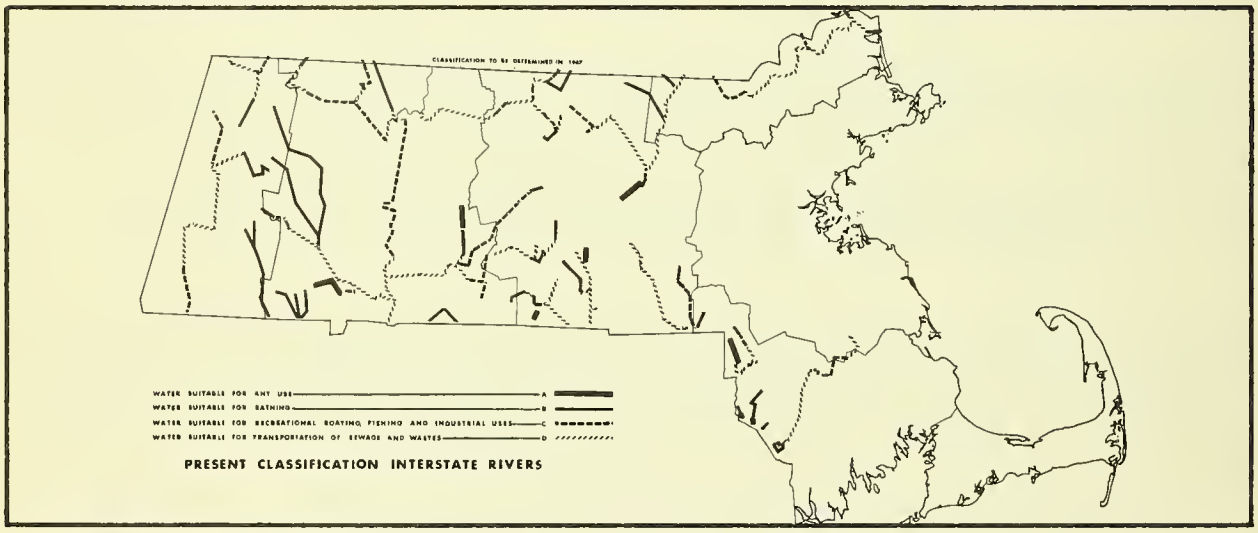
A major program to accelerate and augment pollution abatement in Massachusetts inland and coastal waters has recently been enacted by the 1966 legislature. This important step will provide many benefits for Massachusetts and the advantages for outdoor recreation will be substantial: Essentially every stream, river and estuary will be able to impart all of the qualities and values traditionally ascribed to these resources.

Coastal Waters - Knowledge concerning access to coastal waters is limited. Table 9 presents a compilation of the number of known access points open to the public.

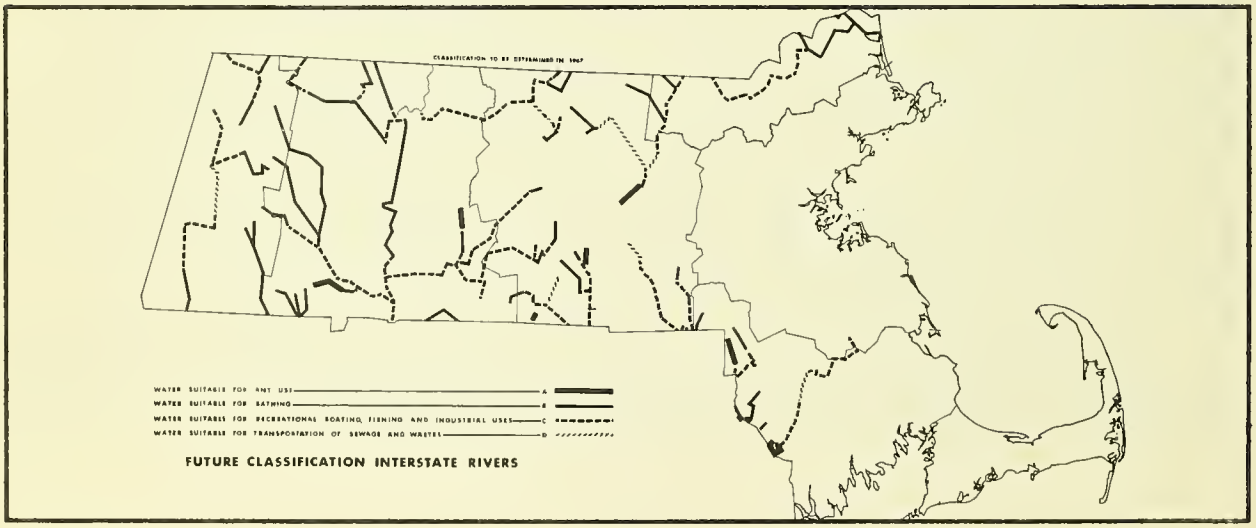
FIGURE 23


CLASSIFICATION TO BE DETERMINED IN 1967
WATER SUITABLE FOR ANY USE — A
WATER SUITABLE FOR BATHING — B
WATER SUITABLE FOR RECREATIONAL BOATING, FISHING AND INDUSTRIAL USES — C
WATER SUITABLE FOR TRANSPORTATION OF SEWAGE AND WASTES — D

PRESENT CLASSIFICATION MASSACHUSETTS RIVERS (NOT INTERSTATE)


CLASSIFICATION TO BE DETERMINED IN 1967
WATER SUITABLE FOR ANY USE — A
WATER SUITABLE FOR BATHING — B
WATER SUITABLE FOR RECREATIONAL BOATING, FISHING AND INDUSTRIAL USES — C
WATER SUITABLE FOR TRANSPORTATION OF SEWAGE AND WASTES — D

PRESENT CLASSIFICATION INTERSTATE RIVERS


CLASSIFICATION TO BE DETERMINED IN 1967
WATER SUITABLE FOR ANY USE — A
WATER SUITABLE FOR BATHING — B
WATER SUITABLE FOR RECREATIONAL BOATING, FISHING AND INDUSTRIAL USES — C
WATER SUITABLE FOR TRANSPORTATION OF SEWAGE AND WASTES — D

FUTURE CLASSIFICATION INTERSTATE RIVERS

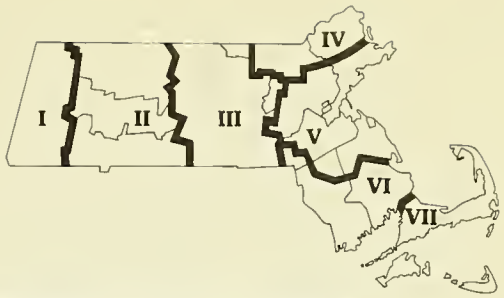


TABLE 9: MASSACHUSETTS SALT WATER ACCESS POINTS by Type and Region.

Region	Launching Sites	Surf Fishing Access Points*	Jetties	Piers
IV	7	4	3	1
V	56	6	2	19
VI	34	2	0	2
VII	88	21	10	7
Massachusetts	185	33	15	29

* All are publicly owned.
Source: Massachusetts Department of Commerce and Development.

Water Supply Reservoirs - Water supply reservoirs, prime among which is the Quabbin System of the Metropolitan District Commission, are not included in the above water resources. These, of course, have great potential for recreation depending on the willingness of prospective users to pay for the additional treatment costs which may be entailed, and the willingness of the general public to accept the diminution of water quality that would likely result from intensive recreation use.

No recreation is permitted on some of these reservoirs. On others recreation at controlled, low densities is permitted. At the Quabbin, for example, fishing is permitted under carefully regulated conditions. Picnicking and sightseeing are provided in the areas below the dam, and other parts of the reservation are being used as habitat for the wild turkey restoration project of the Division of Fisheries and Game.

Controlled use at low intensity would not appear to have an adverse effect on either the cost or quality of the water. While this low intensity use would not greatly increase the total recreation capacity, it would add valuable quality and variety that may not otherwise be available in the future within the Commonwealth. These areas could provide a significant proportion of the natural environment recreation in the years to come.

RECREATION QUALITY

The preceding inventory detailed the quantity of available recreation resources, and was compiled from agency records. To treat the subject of quality comprehensively requires, in addition to a record search, on-site analysis of each recreation area. Fortunately, this highly detailed treatment is not necessary to develop a general plan. Random visits to typical areas can provide information sufficient to indicate overall quality needs.

Based on such a sampling process, it is concluded that Massachusetts maintains, in general, a high level quality in its public recreation areas, but there are exceptions. In some areas where original quality was high, use intensities have grown until they are totally inappropriate to the level of development of the basic resource. The quality of experience at these areas, therefore, is greatly diminished. At other areas of high quality development, main-

tenance has been insufficient and here, too, the quality has deteriorated.

Another factor not appearing in the statistics, but contributing to the quality of the overall recreation environment, involves the variety of experiences and environments which can exist within the listed activities and resource classes. Obvious examples of variety are fresh and salt water, pools, small ponds and expansive sand beaches. Nature study is enjoyed in every possible ecological system from desert to ocean depths. The list is endless. Massachusetts hunters may prefer marshes, fresh or salt; farmland, fields, forest, or forest borderland; or target, or trapshooting. Many campers enjoy the lakeshore; some seek the mountains or the sea. The great range of environments which Massachusetts enjoys is described in Chapter II, The Setting.

An exhaustive study of each activity would be concerned with all of this diversity, as well as many other detailed factors. The various agencies and individuals who manage and administer the many important programs providing recreation opportunities, deal constantly with these variables, each bringing a unique point of view to the activity. In developing the comprehensive plan, it is recognized that these factors exist and the plan is intended to be broad enough in scope to allow full freedom of action within the general outline. It is also recognized that owing to limited natural resources, the problems of providing the desired variety may be much greater in some areas than in others, thus necessitating some shift in emphasis from the demand indications.

POTENTIAL RECREATION SITES

Land and Water Areas - In 1957 specific parcels of land and water totaling 217,260 acres were recommended to be acquired under the long term program. Through 1965, 16,405 acres were acquired in areas designated in the program and 15,389 acres were dropped from the list of recommendations owing to adverse development. In the same period, however, 30,333 acres were added to the list of desirable areas. Thus, the net acreage now on the recommended acquisition list is 215,799. Table 10 compares the 1965 potential recreation acreage to the 1957 potential by region.

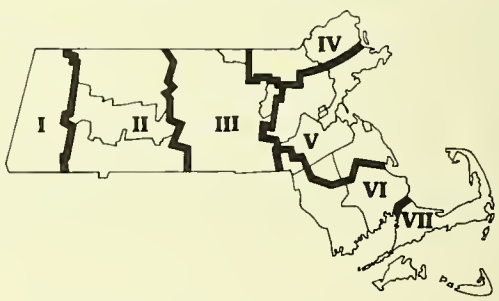


TABLE 10: MASSACHUSETTS COMPARISONS OF POTENTIAL PUBLIC RECREATION ACREAGE, 1965 and 1957 by Region

	Region							
	I	II	III	IV	V	VI	VII	TOTAL
Acquisition Recommended in 1957	84,297	52,580	37,411	4,565	14,765	9,570	14,072	217,260
Acreage Dropped*	9,248		1,376	900	3,650	215		15,389
Acreage Acquired	7,005	5,230	2,368	15	857	894	36	16,405
Acquisition Recommended in 1965	4,034	7,220	3,873	790	115	100	14,201	30,333
Present Potential Acreage	72,078	54,570	37,540	4,440	10,373	8,561	28,237	215,799

* Due to change in use, availability or other reasons making it no longer desirable for public acquisition.

Source: Massachusetts Department of Natural Resources, Massachusetts Recreation Plan 1957, and Edwards and Kelcey.

Small Watersheds Program - Part of the potential supply of water resources consist of reservoir areas planned or being developed under Public Law 566, the Small Watersheds Program. The present potential is presented in Table 11.

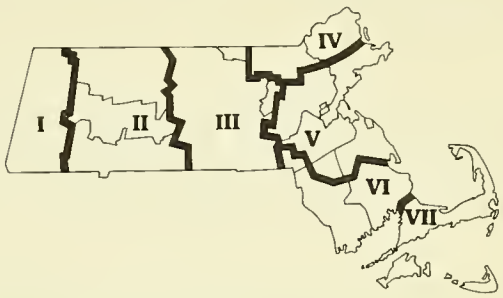


TABLE 11: MASSACHUSETTS POTENTIAL WATER SUPPLY under the Small Watersheds Program.

Region	"Permanent Pools"		Total Acreage of Land and Water
	Acres of Water	Number of Reservoirs	
I	1,176	4	9,428
II	46	3	350
III	103	3	2,848
V	192	1	2,647
Massachusetts	1,517	11	15,313

Source: Public Law 566.

MUNICIPAL FACILITIES

Complete and accurate information for each city and town is required to assess recreation needs properly at the community level. Available information on municipal recreation facilities is incomplete and lacks the uniformity necessary for statewide analyses. Municipal planning studies have not been completed for all of the communities. Moreover, those that are complete seldom contain the detailed information required to assess community recreation needs on an activity-by-activity basis.

The limited and incomplete returns of an inexpensive mail questionnaire survey, undertaken as part of this study, proved insufficient to provide a useful sample. Coordination of programs and local planning requirements of the U.S. Department of Housing and Urban Development and the U.S. Bureau of Outdoor Recreation is recommended to help bridge this gap in the data. A complete survey of municipal outdoor recreation resources and facilities should be undertaken as part of the State outdoor recreation planning program to evaluate (1) the need for State leadership at the local level, and (2) the extent of State assistance required to meet the need.

PRIVATE FACILITIES

This study was limited to the use of available published material. It was possible to obtain, from publications of various recreation associations and organizations and limited questionnaires, a useable if not exhaustive inventory of private facilities for family camping, snow skiing, golf and sightseeing. The results of this inventory are presented in the tables dealing with supply in the Appendix: A brief summary is pertinent here.

Camping - Approximately 70 per cent of the total capacity for family camping is provided by private campground operators. This varies from a low of 33 per cent in Region IV to a high of 87 per cent in Region VII (Source of Data: Parry, Don: Campers Guide to New England and New York State, 1965 Edition; and American Automobile Association: Eastern Campground Directory, 1965).

Snow Skiing - Massachusetts has about 7 per cent of the total capacity in the Northeast United States. Over 80 per cent of this is provided by private operators. Half of the remainder is provided by private operators on a concession basis of public land (Source of Data: The National Survey: Eastern Ski Atlas, 1965).

Golf - While golf is only part of the category "Outdoor Competitive Sports," the figures are interesting. In Massachusetts only 7 per cent of the golf courses are publicly owned compared to the national average of 13 per cent, according to figures of the National Golf Foundation. However, Massachusetts remains somewhat above the average in golf courses compared to population. In Massachusetts 20,100 people per course compare to the national average of 24,200.

Sightseeing - Massachusetts stands out for its many historical and cultural attractions. In the nation, it is second only to New York in the number of sites declared eligible for the Registry of National Landmarks of the National Park Service, January 1, 1965. The Northeast States rank as follows:

New York	61
Massachusetts	55
Connecticut	10
Rhode Island	7
Maine	5
New Hampshire	4
Vermont	2

In addition to these sites of national interest, an additional 188 outdoor sites of historic and cultural interest are significant enough to be listed in the tourist guidebook of the American Automobile Association. Of the total of 243 sites, only about 5 per cent are in public ownership, the remainder being owned and operated by private and semi-public organizations and trusts.

Other Private Facilities - Estimates have been made of the amount of private participation in supplying other facilities. The Massachusetts Division of Fisheries and Game estimates that, at present, 75 per cent of all hunting is done on private land. Based on the compilation of hiking trails by the Appalachian Mountain Club, there are some 1,227 miles of identifiable hiking trails located on public and private land in Massachusetts. Some 870 miles of trails are indicated in the inventory of public facilities as lying within the boundaries of the public reservations. It is well know that private enterprise plays a leading role in the provision of boating and fishing facilities, particularly along the seacoast; the size of this role is not yet determined. Private efforts are also largely responsible for the promotion of the spectator activities, viewing outdoor sports, drama, and concerts.

Vacation home sites and resorts have a large but unknown recreation capacity. Many include private waterfronts, wood lots or other recreation resources. The extent of private waterfront ownership was mentioned previously in connection with the Great Ponds, rivers and ocean shore, and is well recognized for its importance, but the importance of recreation in private forest ownership is not generally recognized. A recent survey of private ownership of forest land in Berkshire County made by the Department of Forestry and Wildlife Management

of the University of Massachusetts indicates that one of the prime reasons for owning the land is for personal recreation and that management for forest products is often either a secondary consideration or not a consideration at all.

Chapter V

THE NEEDS

Introduction

The recreation needs of Massachusetts can be set forth in many ways, for these needs while concrete are not absolute. They are not the simple result of relating present recreation capacities to forecast demands for recreation. Relating supply and demand is part of the process of determining needs, but at the State level many other factors enter. For example, the consideration of unique or scarce facilities and those which are not confined to community or county boundaries are of special concern to the State.

To the casual observer the recreation needs of Massachusetts do not have to be met for there is no immediate apparent price to pay for inaction. The recreation environment of Massachusetts, however, forms a backdrop similar to a stage set; though it may not always be in clear focus, is essential to the success of the play. If Massachusetts recreation needs fail to be fulfilled, especially those which call for effective organization and development, the environment of the State will suffer. Overcrowding of existing facilities will occur, some of the demands for recreation by persons from other states will be transferred out of Massachusetts, and finally outdoor recreation itself may become less attractive. The cost of failure to meet recreation needs is more tangible than might be thought. Reflect on the reasons for the location of many firms on Route 128. The suburbs to the west with their rural flavor and abundant open space offered attractive residential areas for employees of the various firms, and this emerged as a significant element in the location decision. Clearly, the natural environment of an area, while it cannot be measured directly in jobs or dollars, has a pervasive effect on the total development of a region. In essence, the price to be paid for lack of adequate outdoor recreation facilities is one of long-term deterioration of the environment.

Recreation needs fall into two classes which are interdependent and equally important. One class of needs relates to capital investment for facilities and resource development. The other is organizational and administrative, in that it involved policies, programs, and methods used to provide recreation opportunities.

Certain recreation activities are properly in the domain of the state and are most successfully managed at this level. These are activities for which there is great popular demand and which require more than local administration, because resources are either limited or extend beyond community boundaries. When dealing with limited or region-wide resources, the state should consider all of the demand including local or home-based demand, as well as that generated by persons on vacations, trips, and outings.

In other activities where resources in local areas are generally available, demand generated in communities by residents can be satisfied by local action. The state should concern itself directly with providing facilities to satisfy the demands of persons recreating away

from home who usually seek out larger, more unusual and broadly-based facilities than those provided at the local level. The state's role in regard to the local community is to provide leadership and to stimulate local areas to provide adequate recreation opportunities and open space.

Based on the above considerations, comparison of existing supply with the forecast demand and the goals set forth in Chapter I, the outdoor recreation needs of the Commonwealth for the next five years were determined and are presented in the following sections.

Facility and Resource Development Needs

Outdoor recreation needs are essentially determined through a comparison of supply and demand. The supply and demand data prepared for this study permit quantification of the deficit in each region, the degree of precision varying for different activities. In all activities the total demand has been estimated; for some activities the total supply is known, for others only the public portion is known. In the process of determining public recreation needs, then, it is necessary to apply judgment to the basic data. Judgment is necessary in order to prepare a sound program which recognizes participation of both public and private sectors in recreation.

When possible, the amount and nature of participation by the private sector was examined. In all cases the type of facilities and the share of the demand met by public facilities was appraised. The type and extent of available natural resources were also considered in light of their recreation potential. In determining the ultimate allocation of needs among the various regions, the total statewide needs were weighed against the needs of the individual regions. Finally, the State's financial ability was taken into account and the recreation needs of citizens related generally to their other needs. In addition the direct and indirect economic benefits of recreation were considered.

The comparison of patterns of demand for recreation with the supply of land and facilities highlights certain needs for outdoor recreation in Massachusetts.

First, development is required. This is a primary need throughout the State although the emphasis varies with the particular regional situation. In the western part of Massachusetts water resource development is crucial. Much of our now polluted water is an economic and social liability; water-related recreation thus falls short of the potential implicit in the water supply. Effort is required to coordinate water resource projects and to deal creatively with the substantial water potential of western Massachusetts. In this regard, research projects dealing with water supply and quality must be completed; they are a necessary forerunner to the development of water-based municipal activities. In eastern Massachusetts the urgent need is for recreation facility development to serve more than half the State's residents.

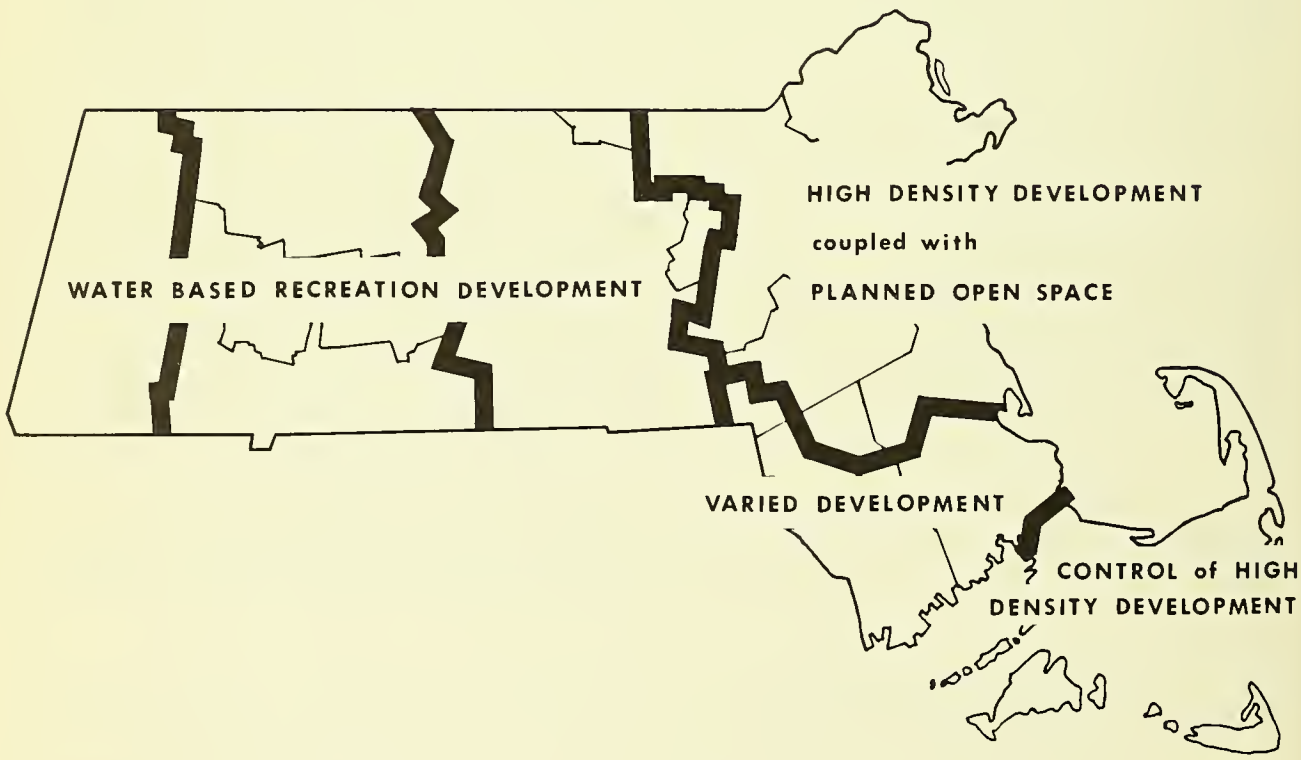
Specifically, the State should concentrate development in the activities which: (1) have broad appeal, (2) are in short supply, and (3) are traditional in interest. These are: swimming, fishing, picnicking, boating, hunting, and camping. Major facilities can provide one or more of these prime activities and a range of supplementary activities as well, including competitive sports, hiking and nature study.

Statewide Activity Needs

The State's recreation responsibilities lie in administering and supplying recreation facilities that will serve the segment of the population recreating on vacations, trips and outings. The State is also best equipped to deal with activities involving scarce and regionally limited resources. Consistent with these concepts, the State should take definite action in connection with six recreation activities:

FIGURE 24

the primary needs



SWIMMING

Swimming involves the limited resource of inland waters as well as coastal beaches. It is recommended that the State meet 70 per cent of the 1970 demand for swimming generated by persons on vacations, trips and outings, or that it provide swimming capacity for 170,000 persons who would be recreating on an average weekend day in the summer. Present facilities will accommodate 130,000 people. A need exists, therefore, to provide capacity for approximately 40,000 additional people.

FISHING

Fishing is one of the more popular activities among persons recreating on vacations, trips and outings. The total supply of fishing facilities at the present time is limited. The potential for expansion, however, is great. Since water resources usually transcend municipal boundaries it is recommended that the State be responsible for meeting the total demand for fishing, at home and away. Approximately 168,000 persons in Massachusetts will fish on an average weekend day in 1970. If made fully accessible, the present water resources are sufficient to meet this demand. Beyond 1970, however, extensive additional development will be required to meet the rapidly increasing demand if Massachusetts is to remain attractive to fishermen.

HUNTING

Hunting is similar to fishing in that game is lacking in many parts of the Commonwealth, and it can only be supplied on specific types of land. It is recommended, therefore, that the State make acquisitions suitable to meet a majority of the hunting demand by 1970, which will then be on the order of 61,000 persons on an average weekend day. Since hunting land is adequate in the western part of the State for the present, it is further recommended that acquisition of the needed additional land during the five-year program be concentrated in the eastern sections of the State in Regions IV, V, VI and VII. These regions, which are near the population centers and in need of green space preservation, will also benefit through the multiple use of these hunting areas in off-hunting seasons. It is estimated that 30,000 acres of diversified types of land, marsh and uplands will be required to meet the demand.

BOATING

Boating demand in Massachusetts will soon far exceed the capacity even if all the inland Great Ponds are devoted to it. If allowed to increase randomly, boating could well destroy the enjoyment of other recreation, particularly in the ponds of the Commonwealth. Careful control and restraint of the use of boats, therefore, is recommended. Boating demand can more satisfactorily be serviced along the coast by providing access ramps to coastal waters. It is suggested that the State meet approximately 25 per cent of the 1970 demand in Regions I, II and III, and approximately 15 per cent in the coastal regions, where private enterprise is currently supplying a large share of the capacity. In this area the State should not compete with the private marinas but should attempt to stimulate private investment for the development of boating facilities. State participation is best directed toward regulation of boating, general resource development, and provision of access points for the smaller trailer and car-top boats.

PICNICKING AND CAMPING

Picnicking and Camping are activities in which the State has a traditional interest that it should maintain. It is recommended that the State provide picnic areas for 50 per cent of the 1970 away demand. This requires providing capacity for an additional 24,000 persons. Camping is an activity in which the private sector can be successful if the economics of the relationship between private owners and the State are properly handled. The State should provide 20 per cent of the anticipated camping demand or 1,000 additional campsites. Generally, the State should provide basic camping, oriented essentially toward enjoyment of the natural environment, reserving for the private sector the provision of special facilities and services in conjunction with campgrounds.

The above needs relate to the hard core of recreation that is of immediate concern to the State. Needs exist in the remaining activities to complement and supplement the major ones. These needs cannot be quantified here, for their successful development is largely dependent on action in the six primary activities and in the potentials of a particular site. A specific example of this, and one which should be stressed, is that attention should be given to developing a continuous system of hiking trails rather than the existing many short pieces. This system might follow the streams, valleys and ridge tops, being interconnected by using abandoned railroad, canal, or existing utility rights-of-way. The attractiveness and usefulness of a trail such as the Appalachian Trail is certainly increased many times by the fact that it is continuous for its entire length. This has increased its use by providing increased access.

Play areas for outdoor competitive sports will extend the usefulness and attractiveness of many recreation areas. Winter activities such as ice skating and sledding will be required but should be developed to supplement private ski developments. Thus, the State need not develop major ski facilities itself. In regard to activities such as outdoor concerts and sports events, no major state involvement is required. Table 12 presents the statewide needs in the key activities.

TABLE 12: MASSACHUSETTS PRIMARY RECREATION NEEDS

Activity	Total Demand 1970	Available Public Supply 1965	Recommended Additions 1970	Supply 1970	Public Supply / Total Demand Per cent 1970
Swimming (Persons)	242,700	130,200	41,000	171,200	70 %
Camping (Campsites)	9,350	2,000	1,000	3,000	32
Fishing (Persons)	168,000	63,000 plus	Balance	168,000	100
Picnicking (Picnic Sites)	28,000	6,700	5,900	12,600	45
Boating (Boats)	42,500	2,900	4,000	6,900	16

Regional Needs

The State-wide recreation needs are to some extent the sum of regional needs. There are, however, needs which are specific to a particular region and result from the particular regional character and potential. The following is a summary of regional needs based on a

consideration of expected recreation demand and the special potential of each region.

REGION I

The Berkshires are one of the most popular tourist areas in Massachusetts. Consequently, there is pressure to develop recreation potential in the region. This pressure stems mainly from development to the south and west in New York and Connecticut.

One of the few areas of Massachusetts which approaches a wilderness environment lies in the southwestern corner of the region and has often been suggested as a potential site for part of a tri-state park. The State's total recreation supply would be better balanced and more diversified if this area were preserved by that means. The new facility would center around Bash-Bish State Forest and Mount Everett Reservation in Massachusetts, New York's Taconic State Park and Connecticut's Mt. Riga State Park.

In addition to this specific development, the Berkshires require continued investment in developing recreation potential. The region contains splendid scenery and vistas which attract the high frequency of picnicking and driving for pleasure in this region. These natural assets should be preserved and enhanced. Ironically, the vistas will close over and valuable wildlife habitat is lost as land is taken out of active farming and reverts to brush and forest.

Numerous streams and ponds enhance the area but many are not now accessible to the public. This lack of access is a major shortcoming which can be overcome. Thus, development of water resources in the region should be emphasized. Such development would provide recreation facilities for many activities — most notably fishing, boating and swimming.

The Berkshires are among the few areas in Massachusetts where snow-skiing and other winter sports are a business. The present supply appears adequate to meet the demand which is likely to exist in 1970. The State should make no direct investment in this industry but should play a supportive role in attempting to extend the season in activities such as camping, as well as developing ice skating rinks and tobogganing slopes.

The needed emphasis in Region I, therefore, is on the preservation of a large natural area and a major commitment to the development of water resources for recreation. A program focused in these two directions would provide additional facilities in almost all of the twenty-two activities. It is recommended that major emphasis be placed upon swimming, camping, fishing, picnicking and boating. Other activities should be provided as parts of specific recreation site plans.

Table 13 shows the needs to be satisfied by State facility development.

TABLE 13: THE BERKSHIRES: PRIMARY RECREATION NEEDS

Activity	Total Demand 1970	Available Public Supply 1965	Recommended Additions 1970	Supply 1970	Public Supply / Total Demand Per cent 1970
Swimming (Persons)	10,000	1,600	5,000	6,600	66%
Camping (Campsites)	400	300	40	340	85
Fishing (Persons)	6,100	1,560	4,540	6,100	100
Picnicking (Picnic Sites)	1,140	700	80	780	68
Boating (Boats)	1,420	130	250	380	27

REGION II

The Connecticut River Valley is the major recreation focus of this region and can be the source of additional recreation facility development that will make the region one of Massachusetts' major recreation centers. Full development of the water resources of the Connecticut River is recommended. The river itself can support a range of recreation activities, although it does not do so at the present time, largely because the quality of the water prohibits broad recreation use. This situation must, of course, be corrected before extensive progress can be made. In addition to the Connecticut River, water resources would be an asset at the eastern and western boundaries of the region. The feasibility of utilizing the river for the creation of water bodies in these areas should be investigated.

A major study of the recreation use and potential of the river basin is presently under way. This study will formulate a plan for recreation development in the area. Since the water potential is great, it is recommended that a beginning be made by further developing the area through the provision of additional swimming, fishing and boating facilities, as well as complementary picnicking, hiking and play areas. These will serve a large and growing market and will represent a first step in the process of bringing the region to a more prominent position in the recreation field.

The Connecticut Valley region is also a winter recreation area. A considerable amount of skiing takes place at Mt. Tom and Thunder Mountain. Skiing will continue to increase in popularity but because of unpredictable and varying snow conditions and because private endeavors can earn a profit, investment by the State in winter recreation should be confined to activities which support use of the major ski areas. In this regard recommendations are similar to those for the Berkshires.

TABLE 14: THE CONNECTICUT VALLEY: PRIMARY RECREATION NEEDS

Activity	Total Demand 1970	Available Public Supply 1965	Recommended Additions 1970	Supply 1970	Public Supply / Total Demand Per cent 1970
Swimming (Persons)	13,800	2,600	6,300	8,900	65 %
Camping (Campsites)	700	370	160	530	76
Fishing (Persons)	13,100	5,400 plus	Balance	13,100	100
Picnicking (Picnic Sites)	1,600	1,200	0	1,200	75
Boating (Boats)	3,550	730	200	930	26

REGION III

Central Massachusetts lacks a recognizable large scale natural feature such as other regions have. However, it contains the vast Quabbin Reservoir, the largest lake in southern New England. This facility supplies the water needs of millions in the eastern part of the State and must be carefully managed for this prime use. Nevertheless, a carefully considered development plan for the Quabbin Reservoir could provide increased recreational focus for the region. It is recommended that this impressive area be opened essentially for wilderness-type

use and that its unspoiled character be maintained. This would provide central Massachusetts with a drawing card it now lacks and would probably stimulate use of the several attractive State areas now located there.

This region has many bodies of water smaller than the Quabbin Reservoir that are not now accessible to the public. The opening and development of these water bodies will greatly increase the attractiveness of this region and serve not only residents but visitors from the Boston metropolitan area. Additional large impoundments would also enhance the region.

Development of water resources is the key to satisfying recreation demands in Central Massachusetts. The demand for swimming, fishing and a certain portion of the boating could be satisfied readily. Complementary activities such as picnicking and camping are needed in conjunction with water resource development. Table 15 presents the major facilities proposed for State development.

TABLE 15: THE CENTRAL HIGHLANDS: PRIMARY RECREATION NEEDS

Activity	Total Demand 1970	Available Public Supply 1965	Recommended Additions 1970	Supply 1970	Public Supply / Total Demand Per cent 1970
Swimming (Persons)	24,800	6,700	10,300	17,000	69 %
Camping (Campsites)	820	250	200	450	55
Fishing (Persons)	18,700	11,900 plus	Balance	18,700	100
Picnicking (Picnic Sites)	2,800	1,500	220	1,720	62
Boating (Boats)	4,600	1,060	670	1,730	38

REGION IV

Region IV, the smallest of the recreation regions, contains a variety of environments ranging in the east from typical coastal communities to farmland in the west. The region contains superb coastal facilities for recreation but the inland sections have many unfilled needs. The Merrimac River can assume an important recreation role when pollution is abated. Aside from the development of the Merrimac River, a major need in this region is to preserve the open space which exists between it and the expanding urban influence of Boston.

The region as a whole appears to have an adequate supply for water-related activities. However, while the water supply is abundant in the eastern portion of the region, it is deficient in the western portion.

The region is also deficient in some of the more simple recreation facilities such as picnicking and provisions for walking and hiking. A need exists, therefore, to emphasize water-related activities in the western portion of the region and to develop simple facilities for picnicking, walking and related activities throughout the region. The needs in the major activities are shown in Table 16.

TABLE 16: THE MERRIMACK VALLEY: PRIMARY RECREATION NEEDS

Activity	Total Demand 1970	Available Public Supply 1965	Recommended Additions 1970	Supply 1970	Public Supply Total Demand Per cent 1970
Swimming (Persons)	17,700	22,700	1,000	12,400*	70 %
Camping (Campsites)	670	390	70	460	69
Fishing (Persons)	12,800	1,600 plus	Balance	12,800	100
Picnicking (Picnic Sites)	1,900	480	690	1,170	62
Boating (Boats)	3,100	130	230	460	15

* The excess supply on the coast is utilized to help meet the deficit in Region V, the Massachusetts Bay Region. The additions recommended are for the western part of the region.

REGION V

The Boston Metropolitan Region is the economic and cultural hub of the State. Its urban character precludes the type of development which can be undertaken in other parts of the State. The demand for recreation is considerable, however, and must be met with a different approach than can be taken in the more sparsely settled areas of the State. The major recreation features of the region in terms of total use are those supplied by the Metropolitan District Commission.

The needs of the Boston region are twofold: first, the continued development of recreation activities in quite densely populated environments, and second, the assurance of planned open space. The nature of the area precludes the maintenance of extensive natural areas. However, the Bay Circuit concept of open space would provide a needed spacial definition for the region, as well as separating it from development to the west in Worcester county. It is recommended that major emphasis be placed on acquisition and development projects in the Bay Circuit.

A major natural asset of the Boston region is its harbor and associated islands. Restoration of the harbor and its historic waterfront is taking place. In conjunction with this, development of activities on the numerous harbor islands can provide unique recreation opportunities.

The possibility of using the extensive waterfront parking lots in this region for boat launching areas should be investigated. These lots, which represent a large investment, are excellently served by the highway system, yet they sit largely vacant during peak recreation hours. Many of these lots are already served by restaurants, gas stations, marine supply stores and other supporting facilities. Investigation of their recreational-boating potential should not be limited to conventional systems. Boat launchings, floating ramps and other unique facilities may be required.

Major land acquisitions are difficult in the region because competition from other uses (industrial, commercial and residential) makes land cost prohibitively high. However, many large areas have been bypassed in the process of suburban sprawl. These areas — the swamps, the marshes and the dumps — may be the region's most valuable land asset. Surrounded by high density residential developments, many people have ready access to them. With patience,

these areas can be developed into wooded parks and charming recreation spaces.

Recreation needs exist in every activity in the Boston region. The greatest needs are for development of the more popular recreational activities such as swimming, fishing, picnicking, and boating.

To help meet the demand for swimming, it is recommended that a major ocean beach and high density swimming pools be provided by 1970. Full development of the inland ponds to aid in meeting the fishing demand is further recommended. Picnicking should be developed primarily to complement other activities. To satisfy the boating demand it is recommended that the coastal areas be given greater emphasis than the inland ponds. The demand for camping in the Boston region appears great; however, it is a difficult demand to meet. It is recommended that a demonstration project be undertaken in the southern portion of the region, prior to any major camping facility construction program, to determine the response to camping in the metropolitan area. Since the demand appears so high, the demonstration project should be oriented toward high density urban camping serving as a base for sightseeing in this historic region. This is an exception to the general State policy of providing essentially nature-oriented camping. It could also call for exceptional administrative techniques, such as concession operations under State control.

Hunting is a difficult activity to accommodate in a metropolitan region. Land acquired for this purpose should, therefore, serve several purposes and should be a component of the region's open space plan.

Maintenance and redevelopment of facilities is treated elsewhere in this report; however, because of the intense use to which facilities in this region are subjected it seems appropriate to single out this important need for special mention. In less intensively used areas nature often renews itself. This is not usually the case in highly urbanized recreation situations. Therefore, special emphasis on a continuing program of maintenance, redevelopment, and enforcement is essential in this region to preserve the quality of experience for which the facility was originally intended. Major facility needs are presented in Table 17.

TABLE 17: THE BOSTON AREA: PRIMARY RECREATION NEEDS

Activity	Total Demand 1970	Available Public Supply 1965	Recommended Additions 1970	Supply 1970	Public Supply / Total Demand / Per cent 1970
Swimming (Persons)	49,000	21,400*	12,400	33,800	69 %
Camping (Campsites)	1,800	80	150	230	13
Fishing (Persons)	55,000	17,700 plus	Balance	55,000	100
Picnicking (Picnic Sites)	5,600	1,400	2,420	3,820	68
Boating (Boats)	16,100	600	1,700	2,300	14

* Includes 11,300 transferred from Region IV excess coastal supply.

REGION VI

This varied region, in addition to its own natural attractiveness, is the gateway to Cape Cod. As such, many tourists pass through it and many concentrate their activity within the region. The demand for recreation activity is quite high, creating an opportunity for wide-scale recreation development. Such development is possible on the coast, as well as on the several inland lakes surrounded by undeveloped land. Multi-purpose development of the Taunton River will have a major impact on this region.

Natural environment areas in this region are threatened by over-use; Myles Standish State Forest, for example, faces this fate. The major need in this area is for the development of additional facilities which include a broad range of activities. Generally, adequate swimming will be provided until 1970; nevertheless, it should be included in any major development project.

In summary, the needs in Region VI are not specific to a particular activity but are varied. Considerable needs exist for additional camping, picnicking and boating facilities. Other activities should, of course, be developed in conjunction with these where the particular location makes such development possible. Recommended capacities for State development are shown in Table 18.

TABLE 18: SOUTHEASTERN MASSACHUSETTS: PRIMARY RECREATION NEEDS

Activity	Total Demand 1970	Available Public Supply 1965	Recommended Additions 1970	Supply 1970	Public Supply / Total Demand Per cent 1970
Swimming (Persons)	32,900	25,900	0	25,900	79 %
Camping (Campsites)	1,300	380	160	540	42
Fishing (Persons)	19,200	2,600 plus	Balance	19,200	100
Picnicking (Picnic Sites)	4,300	850	1,470	2,320	54
Boating (Boats)	5,300	200	550	750	14

REGION VII

In Region VII, Cape Cod and the Islands, present recreation demand and that expected in future years is considerable. Cape Cod and the Islands are among the most popular vacation and resort areas on the eastern seaboard. They face problems and have recreation needs which are quite different from those in the other areas. The Cape suffers from the threat of over-development rather than from lack of it. The State's role here should be one of careful and considered activity. This is the only area in Massachusetts where recreation can be considered a successful, paying industry. Careful local planning and regulation must master the threat of extensive honky-tonk development and a concomitant decrease in the Cape's atmosphere and charm.

The demand for all water-related activities on the Cape is high and should be given careful attention. To preserve the present quality of swimming activity it is recommended that

a major state warm water ocean beach be developed. Additional fresh water beaches should be provided and the municipal ocean beaches should be expanded and improved.

In regard to camping it is recommended that the State meet a smaller share of the total demand in this region than in others but that it give careful attention to pricing, for as a result of the high demand the private sector can engage in this business more successfully here than in other regions. Emphasis should also be placed on activities for which the Cape is ideally suited, such as walking, hiking and cycling.

In summary, it is possible to obtain a broad range of recreation experiences on the Cape. The State's involvement in the provision of facilities should emphasize coordination with, but not regulation of, the private and business interests in the area so that public and commercial endeavors can work toward the goal of preserving Cape Cod and the Islands as an outstanding national recreation region.

The major public recreation facility needs are tabulated in Table 19.

TABLE 19: CAPE COD AND THE ISLANDS: PRIMARY RECREATION NEEDS.

Activity	Total Demand 1970	Available Public Supply 1965	Recommended Additions 1970	Supply 1970	Public Supply / Total Demand Per cent 1970
Swimming (Persons)	94,500	60,800	6,000	66,800	71 %
Camping (Campsites)	3,500	220	220	440	13
Fishing (Persons)	43,900	22,400 plus	Balance	43,900	100
Picnicking (Picnic Sites)	11,100	620	980	1,600	15
Boating (Boats)	8,700	800	400	1,200	14

Organizational and Administrative Needs

THE UNDERPRIVELEGED

A major area in which there is a clear need for state concern and organizational leadership is in the field of recreation for the underprivileged. It has been pointed out that the present and projected demand for recreation is in part a function of the general level of living of the population. The higher the level of living, the greater the ability to obtain recreation.

Demand for recreation, therefore, as expressed in terms of ability to obtain it, is low in the low income groups. There is a tremendous pent-up demand that is not being satisfied in the low income groups.

The social and psychological problems of this group are many and complex. In regard to recreation, for example, many activities are entirely new experiences which involve learning new skills. Thus, recreation planning must consider ways and means of making entry into active recreation as easy as possible for the inexperienced. Many lack elementary knowledge, such as the protection of children at the beach, how to build a campfire (and put it out), as well

as the social skills necessary to be at ease with strangers.

The mere provision of recreation facilities in slum areas will not change the lives or the outlook of people to whom life is a continual struggle. The main problem is a social-psychological one of rebuilding inner strength with the goal of self-guidance. Obviously, swimming pools and picnic tables will not in themselves bring about this end. They are, however, a physical part of a large project and must be provided.

Deep within the development of many recreation plans lies the hidden assumption that the facilities being developed will serve the middle classes and in so doing, all the people. Even though we have recently been reminded that poverty is in fact a problem in this nation of riches, and the Federal government has declared "War" on it, it is easy to ignore because available statistics do not permit the ready identification of the underprivileged. In fact, statistics often work to obscure the problem. One frequent means of identifying underprivileged areas utilizes income data. Areas of greatest need are assumed to be those where a high proportion of families have incomes under $3,000 per year. The question, of course, remains as to what is a high proportion. A small proportion of a large number, nevertheless, indicates a large number of families with low incomes. Yet because the proportion is low, the area is often thought of as not being in need of special aid for this group. In Massachusetts as a whole, the proportion of families in the low income group is not particularly high when compared with the rest of the Northeast; 12 per cent of Commonwealth families earned less than $3,000 in 1960. This figure was 24 per cent in Maine and 14 per cent in New York, with most other Northeastern States comparing with the Massachusetts proportion. As can be seen in Figure 25, 160,000 families in Massachusetts in 1960 existed on an insufficient income. They cluster in the urban cores of the State and in the areas still suffering from decline in the soft goods industries. These families contain approximately 513,000 people; thus, almost 10 per cent of the Commonwealth's population may be considered to be living in impoverished conditions. Although this figure is not particularly high when Massachusetts is compared with other states in the Northeast, comparison has little value. We cannot afford to assume that a problem does not exist because the poor in Massachusetts are no worse off or more frequently encountered than the poor anywhere else in the Northeast.

In the midst of relative plenty, where most consumers are able to obtain the products of their choice, it is too often assumed that everyone, or most people, possess a common consumer item. The ORRRC reports indicate that driving for pleasure is the most frequently performed recreational activity. Many of our recreation facilities are geared to the automobile and are in fact inaccessible without one. Nevertheless, 23 per cent of the occupied housing units in Massachusetts are without an automobile (see Figure 26). This form of mobility is lacking in 353,000 housing units in the Commonwealth. With the occupancy rate of 3.2 persons per housing unit, more than 1,000,000 people in Massachusetts have no automobile available to them. Not all of this number can be attributed to the lower income groups, for many living in urban centers find no need for an automobile or have sufficient funds to make use of one when they desire. Regardless of the fact that an automobile may have no appeal for a certain segment of the group lacking them, it is highly likely that the majority of this segment would indeed own automobiles if possible. The implication of this statistic is important. It is that a significant proportion of Commonwealth residents have little or no access to the State's major recreation areas. This no doubt results in the tremendous overcrowding of facilities which lie within the reach of those without automobiles. Massachusetts is not unique in this situation, however; again it is in line with the Northeast. Nevertheless, the recreation needs of the underprivileged are significant, and an active program should be initiated to answer these needs.

The determination of a program which would best serve to upgrade the recreation opportunities of the underprivileged, and at the same time avoid the obvious pitfalls (such as merely fostering segregation) is complex. A special analysis of the means by which a meaningful recreation program can be developed is required.

FIGURE 25

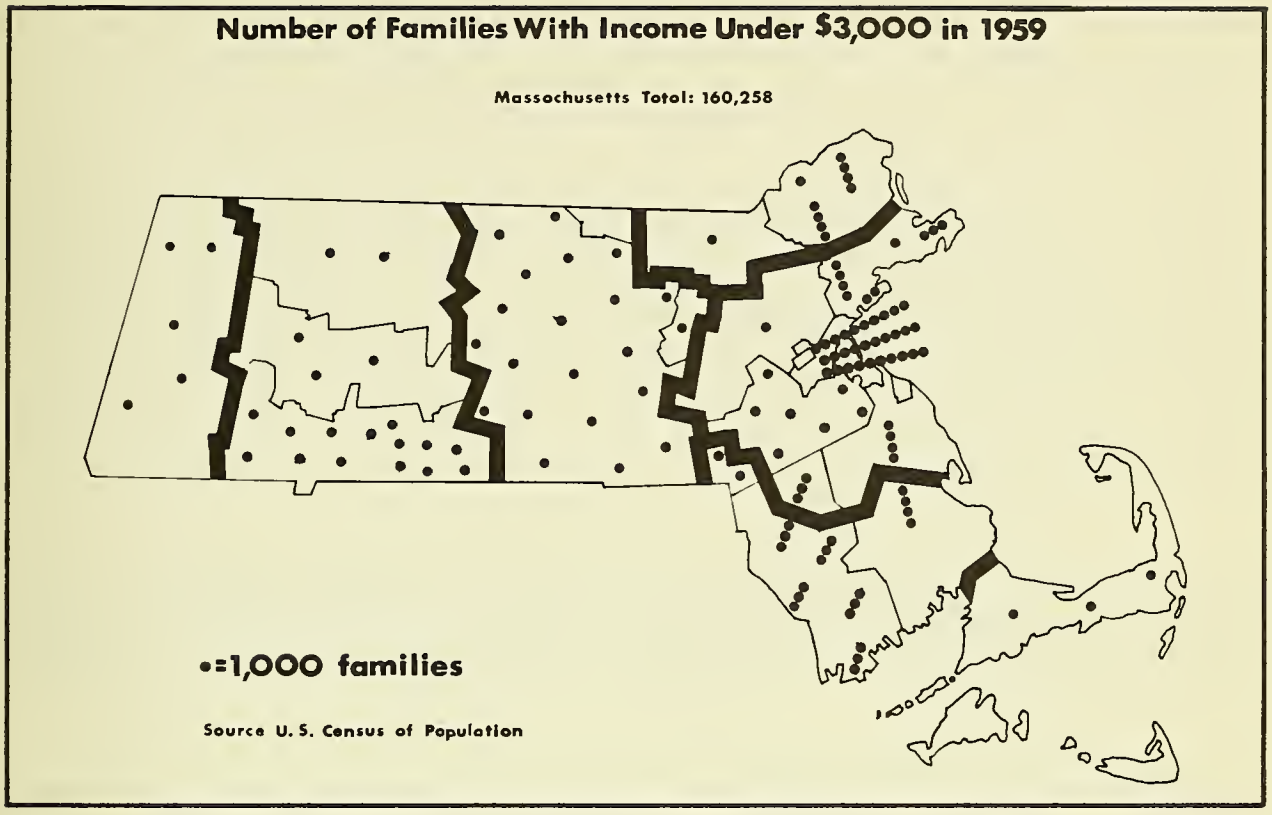
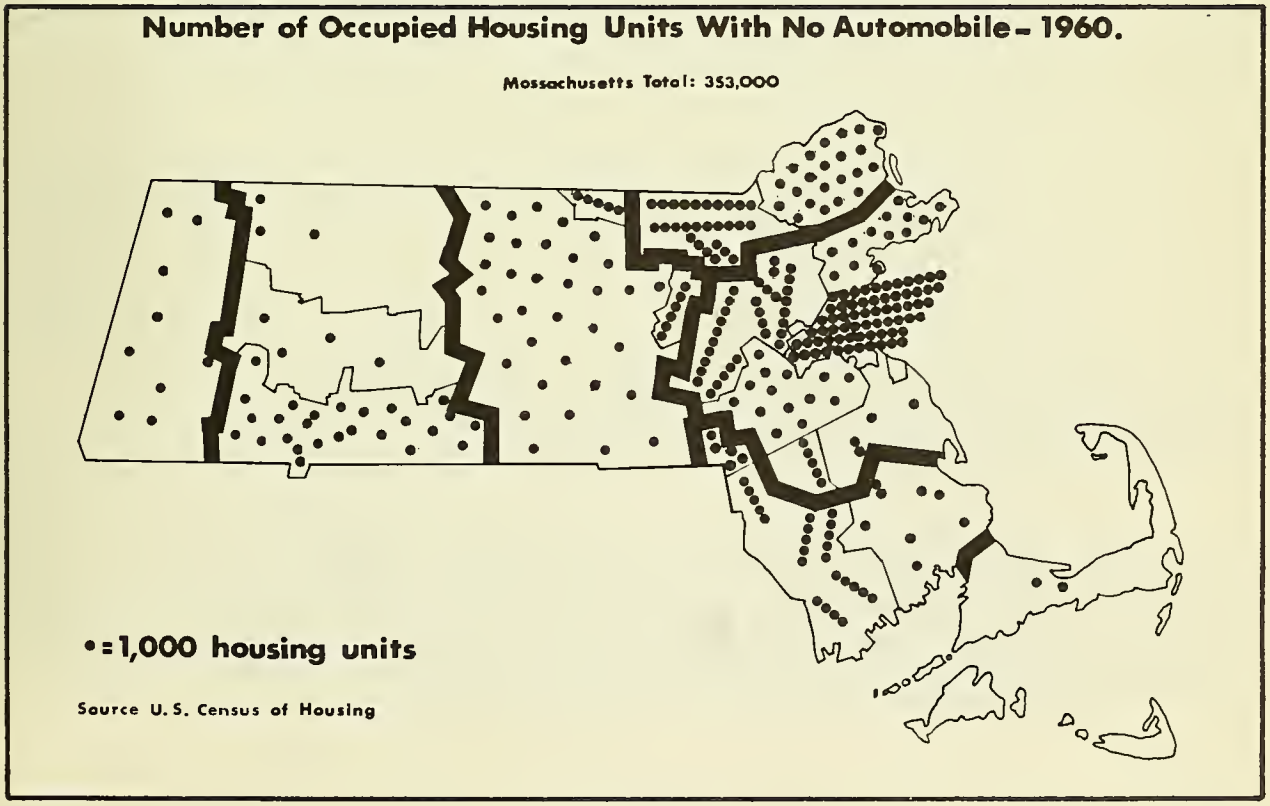

Number of Families With Income Under $3,000 in 1959
Massachusetts Total: 160,258
•=1,000 families
Source U. S. Census of Population

FIGURE 26


Number of Occupied Housing Units With No Automobile - 1960.
Massachusetts Total: 353,000
•=1,000 housing units
Source U. S. Census of Housing

The first elements of such an analysis lie in the State comprehensive planning project. First, the recreation needs of each community must be evaluated. This requires a detailed inventory of the type and capacity of the recreation facilities in each community. Relating this information to the average per capita demand figures presented in this report will demonstrate the relative quantitative needs among communities on a statistical basis. Second, the financial resources of each community must be determined. In areas where these resources will not meet needs, special programs must be administered which will make use of all available sources of Federal, State and local aid. Finally, in determining action programs, specialists who deal frequently with problems of the underprivileged should be called in to help determine priorities for meeting recreation needs in low income areas, as well as to specify approaches which are tailored to the needs of the underprivileged. Consultation with specialists is particularly important, because the needs of the middle class person — for whom most recreation facilities are planned — are not necessarily the needs of the chronically poor. For example, in the normal middle class situation the family provides much of the training and support a child requires in the process of learning. This is not generally the case among lower income families. It may, therefore, be desirable to provide special personnel at facilities in low income areas who can train participants for the use (and treatment) of the facility. Many useful approaches can emerge if cooperation among professionals is fostered and the interest of the underprivileged themselves aroused.

At the present time many Massachusetts recreation areas are open to nonprofit associations who make special arrangements with the Department of Natural Resources for free admission for groups of visitors. These programs should be continued, and expanded opportunities made available. While people require neighborhood recreation facilities, experiences away from home are equally important for they lift one out of the immediate environment and provide a needed element of change.

THE HANDICAPPED

Historically, the care of the handicapped has been assigned to specialists and a high degree of segregation has characterized their treatment. Specific facilities exist for use of the handicapped alone and few can be accommodated at facilities intended for the general public. However, a growing concern for assimilation of the handicapped into general society is emerging. It is increasingly recognized that the line between health and sickness is frequently very fine and that integration of those considered to be healthy with persons less fortunate in their physical and mental well-being can be of benefit to both groups.

Outdoor recreation can provide significant opportunities in the pursuit of a rich and enjoyable life. The handicapped, both in confined groups under medical treatment, and as individuals free in the society, can be helped to achieve this goal. Unfortunately, knowledge of the requirements of the handicapped is still generally limited to medical and psychological specialists, and knowledge of recreation facilities is generally limited to the recreation specialists. Progress has been made, however. Cooperation exists among Massachusetts public agencies and there are several functioning programs. These take the form of technical assistance on recreation facility design and construction, special fee schedules, reservation of facilities for organized groups, and consideration of special design features to enable the handicapped to use recreation facilities more easily and safely. Both groups of specialists feel that much more can be done and are eager to further pursue the possibilities.

Several major areas for action exist. The most obvious is to expand existing programs. More attention can be given to the design of facilities to make it possible for handicapped persons to use activity and refreshment areas, as well as sanitary facilities. Increased attention can be paid to design so that completely normal perceptive senses and agility are not always required to participate in many simple activities such as camping, swimming, fishing, hiking, sightseeing and watching sports. In addition, special educational and interpretive facilities to serve the handicapped should be developed at recreation areas.

While new emphasis must be placed on facilities integrating the handicapped into the outdoor environment, there is a continuing need for special treatment facilities. The possibility of developing specific recreation areas for the exclusive use of the handicapped, particularly at publicly owned areas close to major treatment centers, should be explored. Also, facilities especially attractive to the handicapped might be developed, such as specially designed fishing piers for those confined to wheelchairs or otherwise unable to move about easily or safely in ordinary circumstances.

The necessary mutual education and coordination can be provided by a special representative for the handicapped on the Recreation Advisory Council. He would be charged with representing all of the State agencies directly concerned with the special groups of the handicapped. The primary agencies in this category are the Massachusetts Rehabilitation Commission, and the State Departments of Mental Health, Public Health, Public Welfare, and Education. Through this representation people will be brought together who can combine their skills and knowledge to produce the specific programs and projects which will fulfill the needs of the handicapped.

EDUCATION

Education in and for the out-of-doors is one of the means through which we can supplement efforts in other areas to create an atmosphere in which meaningful outdoor recreation is possible. People must be taught not only how to treat the out-of-doors, they must be aware of the unique value of an outdoor environment. When the value of something is realized, care of it is more easily incorporated into behavior patterns.

Education must span all age groups and be available in a range of situations. Formal training in schools can include a broad range of outdoor activities encompassing individual pursuits as well as the currently emphasized team and group sports. Special classes for adults in the understanding of their natural environment, such as those provided now through the State Extension Service, have great promise and should be expanded. Finally, training can be made available to the entire family by providing demonstrations, lectures, and making interpretive information available at public recreation areas.

Education must be broad-based and generally available rather than limited to formal situations. These have their place but the goal of education for the out-of-doors is to achieve a well-rounded understanding of the natural environment and this can only be achieved through a continuous flow of learning. We must strive to incorporate the desire to learn into each individual frame of reference. Then the care and use of the out-of-doors will be a natural by-product of understanding rather than a law enforcement project.

PLANNING

The outdoor recreation needs of Massachusetts form one aspect of the many developmental requirements of the State. Many outdoor recreation needs can be more effectively met if careful planning is utilized. This means that many developments — ranging from economic and social factors, through physical treatment of a natural resource — must be considered elements in recreation planning.

Recreation planning cannot be rigid. A plan drawn up today must be constantly reviewed and updated. Although we have made estimates of what the future is apt to bring in the way of increased demand and needs, there will be new developments in the future that we have not fully anticipated, and there will be new methods developed to aid in analyzing recreation demand, supply and needs. Recreation must fit in with other aspects of life, and as they change, revisions must be made in our present plans. Therefore, evaluation of the total recreation

picture is a constant necessity. In addition, continual review of programs bearing on recreation is required. Close liaison should be maintained between persons responsible for recreation planning and those concerned with regional or state-wide planning in the broader sense. An outline of items recommended for further study as part of the state-wide development plan for Massachusetts is presented in the long-range program.

TOURISM

It is widely recognized that tourism has emerged as an important industry in the wake of increasing participation in recreation activities. As with other growth industries, the dollars which can be captured by Massachusetts contribute to State economic stability and welfare. It is difficult to estimate the actual number of dollars spent in Massachusetts by nonresidents in pursuit of recreation and tourist facilities; however, it has been stated that the State could be gaining an additional $100 million dollars a year through an expanded public relations and advertising program.

A program is needed to encourage tourism and to present Massachusetts to those entering the State in such a way that their activities will be facilitated.

The quality of advertising originating in the Department of Commerce is high and presents Massachusetts in a pleasing and proper light. This approach should be held as a model for the private promoter. A promotion campaign which is honest and appeals to a market which can be satisfied is far more effective than a campaign which succeeds only in disappointing the visitor who has been led to expect too much, and as a consequence destroys in people's minds the advantages which do exist in Massachusetts.

In addition to continual promotion, the Commonwealth should extend the hand of hospitality by providing information concerning its excellent Tourist Route System at all major State entrances. This system should continue to be improved and used as a basic means of acquainting the tourist with Massachusetts. Such simple things as making sporting licenses available at the time the visitor arrives by selling them through sporting goods stores, as well as town halls, should not be overlooked. In summary, then, the best advertisement for Massachusetts is the tourist who will recommend the State to his friends and will himself return.

UNIQUE NATURAL AREAS

There are a limited number of unique natural features distributed throughout Massachusetts. These play an important role in lending variety and character to the general terrain, as well as providing points of focus for the regions in which they lie. Features such as the outstanding mountains are generally, but not always, incorporated into large public reservations in which a variety of outdoor recreation activities take place. They lend an exceptional atmosphere and enhance the quality of all outdoor recreation occurring in the area.

These natural features have state-wide significance and are worthy of preservation by the State, which should continue to take a positive role in their preservation. At present, some of these areas are administered by special commissions. The State can fulfill its role by working with these commissions in a continuing review of the administrative structure so as to insure the most effective management possible, as well as providing adequate financing to develop these areas to their maximum recreation potential. These areas must not be destroyed by inappropriate development, but managed in a way that their outstanding natural features are maintained. In some instances, it might be appropriate to transfer ownership from the special commission to the State Department of Natural Resources; in others, State financial aid or the simple re-emphasis of the importance of these features to the State will

be in order.

MAINTENANCE

Maintenance of recreation facilities is considered to be a primary need in the State of Massachusetts. There is general agreement that a standard of maintenance and law enforcement equal to the high development standards is required. Without proper maintenance of facilities the quality of the recreation experience is diminished and loses value. In addition, the misuse of resources, including littering and vandalism, is encouraged. Since we assume that a basic aim in the provision of outdoor recreation is to assure a pleasant experience, maintenance becomes a key factor. This is particularly true in areas receiving high use. Furthermore, well-maintained property can support greater use and tends to foster a greater degree of respect for the facility on the part of the public. The price of poor maintenance is reflected in the declining use of many areas. This, of course, puts an added burden on other facilities.

Maintenance should not be regarded as an extra expense. Rather, it should be viewed as having the same level of importance as capital investment in basic resources. In fact, both maintenance and enforcement may be considered continuing capital investments. Extra capital costs are frequently incurred when maintenance is reduced. An adequate maintenance program often permits lower initial costs. This is not to imply that material used in construction of recreation facilities may be frail or shoddy, but that the type of development be carefully considered. The Public Access Board, in its 1965 Annual Report, has called for careful consideration to general layout and construction practices at its sites. There is a broad range of development alternatives and when these are properly conceived, maintenance can be considered a sound annual investment instead of a loss. In cost studies the ratio of proposed capital expenditure to maintenance can be reduced if interest rates and useful lives are adopted which do not unjustly favor capital investment by failing to recognize the alternative investment opportunities for the funds.

Interest rates of 5, 6, or 7 per cent could well be utilized. For example, $10,000 reserved for maintenance will provide, at 6 per cent, $872.00 per year for twenty years for maintenance. For instance, foregoing the paving of roads in natural environment areas might well provide the necessary funds for maintaining the more natural gravel or dirt road. In summary, then, the problems of maintenance can be tackled in such a way that overall costs to the State are reduced which will in turn expand the usefulness, capacity and pleasurable experience afforded by public recreation facilities.

INTERAGENCY CO-ORDINATION

Massachusetts does not need to diversify its recreation management further, for this is already manifold; nor does it necessarily need to consolidate its recreation management. What it does need is continued and intensified co-ordination and co-operation among the agencies to provide the maximum possible return from its resources — natural, human and financial. The Recreation Advisory Council, formed as a result of the study by the Governor's ad hoc Interagency Committee on Outdoor Recreation, is a sound step in fulfilling this aim. Continued effort in this direction will return increased benefits to the State in the form of optimum use of its resources.

INTERSTATE CO-ORDINATION

Developments in one of the Northeast States often have important effects in others. In some cases, such as the Connecticut River Basin Study, these developments completely transcend state lines. To assure co-operation and co-ordination among the States, knowledge concerning one another's programs should be exchanged at the earliest stage of development, and should continue to be exchanged at all levels requiring it.

This type of co-ordination falls within the responsibilities of the chief recreation planner responsible for state-wide recreation planning. By maintaining continuing liaison with his counterpart in the other states and Federal agencies, he will be able to advise these agents of plans in Massachusetts which may affect them, and will also be able to advise participating agencies in Massachusetts of the plans of others which may affect the Commonwealth.

With this basic knowledge shared, co-ordination of the individual programs and projects can be arranged to the depth and extent necessary to fulfill their specific aims.

Chapter VI

THE ACTION PROGRAM

Introduction

The need for certain additional recreation facilities in the Commonwealth is clearly established. The program presented here sets forth five years of action, oriented toward the fulfillment of basic recreation needs. It reflects a careful assessment of outdoor recreation activities as measured by participation, and of facility shortages within the Commonwealth as revealed by comparison of forecast demand with facility capacity. In addition to capital expenditures there will be, of course, a need for annual expenditures for maintenance, operation, planning and administration.

Capital Investment Program

The five-year capital investment program is summarized in Figure 27, which itemizes expenditures. This program is not lavish in its financial requirements although it represents a major financial undertaking. An investment of $9,000,000 a year for each of the next five years will be required to provide recreation for an additional 81,000 people at one time, or over 4 million in a year.

The five-year capital investment program calls for a major effort to provide facilities which will accommodate the most critical recreation activities. A variety of lesser activities are, of course, accommodated within facilities constructed primarily to provide for major activities (for example, open play area and paths for casual walks would accompany picnic areas). The cost of these lesser uses is included in the development costs. The program is divided into the following four categories:

A. Facility development. Construction of facilities to accommodate recreation activity.

B. Land Resources. Land acquisition to provide areas for recreation development.

C. Water Resources. Acquisition of water-related land area such as stream banks, flood plains and access points to impoundments, ponds and coastal waters.

D. Facility Redevelopment. Replacement of obsolete facilities.

FIGURE 27

LAND INVESTMENT $23,000,000

$21,000,000	Land for development
$2,000,000	Land related to water areas

FACILITY INVESTMENT $22,000,000

Facility Development

$10,000,000	Swimming
$3,000,000	Boat Access
$2,000,000	Campsites
$1,000,000	Picnic Areas
$6,000,000	Facility Re-development

TOTAL INVESTMENT $45,000,000

Funds for the development of related activities are included.

Swimming Facility Development Costs. Swimming development costs vary greatly depending upon the type of facility necessary. When a satisfactory pond or ocean beach is available, costs may be as low as $50 per person. If a pond must be extensively developed or a pool constructed, costs may be $300 to $400 per person. A cost of $250 per person instant capacity is a reasonable state-wide average. Thus, the provision for 41,000 persons instant capacity by 1970 as recommended will cost $10,100,000 or $2,020,000 a year for each of the next five years.

Family Camp Site Development Costs. In 1957, it was estimated that development of a family camp site cost $900 to $1,000. At today's costs and higher standards, such development is between $1,300 and $1,500. Vermont's 1964 plan estimates these costs at $1,000 but experience in other states indicates that costs of $2,000 per site are not unusual.

Site development costs include grading roads, paths, picnic facilities, fireplaces, toilets, water, etc. The level of these improvements is, of course, a controlling factor and can vary greatly.

It is estimated that adequate sites can be developed for an average cost of $1,500. Thus, an expenditure of $1,500,000 or $300,000 a year for each of the next five years is necessary to provide the 1000 camp sites recommended for completion by 1970 to accommodate 4,000 campers.

Development of the recommended 2,000 units of swimming in conjunction with these camp sites adds an additional $500 per site or $500,000. Total camping and related swimming development costs thus are $2,000,000 million or $400,000 a year for each of the next five years.

Boat Access Points. Design and construction costs for nine access points built recently by the Massachusetts Public Access Board range from $13,600 to $35,180. Estimated costs in Connecticut for acquisition and development range from $10,000 to $50,000 for six sites. They average $660 for each automobile parking space.

The number of parking spaces is the key to the capacity of an access facility. Thus, the number of spaces should be carefully related to the capacity of the pond, or portion of the pond, served by the access. The recommended boat access program will provide capacity for 4,000 additional boats by 1970. At current costs this will amount to an estimated $3,000,000 or $600,000 per year.

Though not relating strictly to capital investment, the towns should be encouraged to establish fees for the use of the public access points wherever possible, to meet the cost of maintaining and renewing these areas. Assurance of adequate maintenance could reduce the amount of capital investments required without detracting from the serviceability of the facility. Adequate maintenance would eliminate premature need for capital reinvestment. Since fees are levied for use of public swimming and camping facilities it would not be discriminatory to levy fees for boating. Placing the burden of maintaining these areas on the nonuser, by allowing them to be used free, would seem to be a less equitable solution and one which often results in non-maintenance due to lack of funds. Concession-type operation might be appropriate for some facilities.

LAND RESOURCES

Lands suitable for open space uses (including hunting) vary greatly in cost, some being marginal for any other use. As much as two-thirds of the total lands in this category should be such marginal lands. At an average cost of approximately $500 an acre, the lands recommended for acquisition by 1970 would cost $21,000,000, to be allocated at $4,250,000 a year for each of the next five years.

WATER RESOURCES

Water is the important focus for much outdoor recreation. A specific program is recommended for the acquisition of land related to the extensive water resources in Massachusetts. This program will provide public access for outdoor recreation to the seacoast, the Great Ponds, reservoirs, rivers and streams. Public acquisition of rights-of-way, streambanks and flood plains will help to protect and preserve these public water resources.

FACILITY REDEVELOPMENT

During the thirty-five year period of the long-range program, all but the newest of the existing facilities will require extensive renewal and redevelopment to overcome obsolescence. It is recommended that funds for this work be included in each year's program of capital improvements. Estimating that one-thirtieth of the total existing facilities need renewal each year, and that the cost is approximately $100 per person of instant capacity, the annual cost would be $1,200,000, based on the 365,000 person instant capacity now existing.

Responsibility for Program Implementation

As can be seen by examining the inventory of public recreation lands, many agencies participate in providing outdoor recreation. The recommended capital investment program includes all of them. The Recreation Advisory Council was formed to co-ordinate the efforts of these agencies. It is composed of representatives of the agencies and meets regularly to discuss plans and suggest policy. The Council should play a major advisory role in determining the distribution among the agencies of responsibilities for carrying out the program.

State Leadership and Assistance at the Local Level

Throughout this report reference has been made to the large demand for home-based recreation and the State's responsibility to assure that the needs at the local level are met. Included in the Long-Range Program are continuing planning programs designed to assess future needs, and to prepare plans and programs to meet them. Of prime urgency among these planning studies is a study of municipal provisions for outdoor recreation, as compared to needs. A detailed community-by-community study is recommended that will have as its aim the determination of needs not yet met, the financial resources required to meet them, the abilities of each community to meet its needs, and what additional leadership and aid the State may be required to give.

Local needs are great, perhaps larger than the needs at the State level, and the relative needs vary widely from one municipality to another as do the local financial resources.

It is imperative that accurate information be assembled and a sound program of State assistance to municipalities be formulated.

Chapter VII

THE LONG RANGE PROGRAM

Introduction

A broad long-range program is required to provide a means by which continual assessment can be made of progress toward meeting the outdoor recreation needs of Massachusetts by the year 2000. This program consists of: Acquisition and development requirements for regional facilities to be provided by State agencies; A continuing comprehensive recreation planning program as part of the State-wide planning effort; and Guidelines for local community action. These segments of the program are closely interrelated but for the purpose of presentation are discussed separately.

Acquisition and Development Requirements

By the year 2000 there will be a need for 277,000 acres of additional land and water for regional facilities, including 1,700 acres of ocean beach. Development of the total State-owned resources will be needed to meet a demand for 1,800,000 people enjoying outdoor recreation (not including driving and walking) on an average weekend day in the peak summer season.

It is anticipated that the distribution of recreation activity by the year 2000 among the resource classes in Massachusetts will approximate the current distribution for the Northeastern United States. As a basis for projecting the land area necessary to satisfy vacation, trip and outing demand, annual visit data for recreation facilities in the Northeast were examined for each state by resource class. The percentage of total visits which occurred in each class was computed. A further basis for projecting land requirements involved a comparison of these data, by resource class, with the average capacity per acre of existing Massachusetts facilities for each region. It is expected that the projected doubling of outdoor recreation demand by 2000 will result in increasing the average density of use of the Commonwealth's facilities from current levels to levels approaching the current MDC Park District usage. Specifically, it is expected that:

The high density facility capacity (100 persons per acre) in the year 2000 will be greater than even the Metropolitan District Commission's current rate of 60 persons per acre in that class, because the facilities themselves will be improved and because of the great increase in pressure for their use that will accompany the doubling of demand.

The general outdoor capacity anticipated State-wide by the year 2000 will be similar to current usage of Metropolitan District Commission general outdoor facilities in the class, or 8 persons per acre.

The natural environment capacity will be 0.3 persons per acre, mid-way between current state averages and Metropolitan District Commission usage. State-wide natural environment areas should be kept at use densities which are lower than those in the Metropolitan District Commission to preserve their character more faithfully.

Table 20 illustrates land and development required to meet the projected 2000 demand. A fourfold increase in high density development to five times the present capacity is indicated. This reflects the present undersupply of recreation facilities in the built-up areas, as well as the need to conserve Massachusetts' limited land and water resources.

TABLE 20: DEMAND, CAPACITY AND LAND REQUIRED FOR OUTDOOR RECREATION by Resource Class for 2000.

Resource Class	Existing Acreage 1965	Forecasts: 2000		
		Average Capacity Persons per Acre	Demand No. of Persons	Acreage Required
High Density	1,455	100.0	979,000	9,800
General Outdoor	39,483	8.0	623,000	77,800
Natural Environment	363,359	0.3	178,000	593,300
TOTAL	404,297	-	1,780,000	680,900

The 680,900 acres required represents 13 per cent of the area of the Commonwealth. The current total is 404,300 acres or 7.8 per cent, including the Quabbin, Ware, and Wachusetts watersheds. Seventy per cent more area will thus be needed by the year 2000 to meet away demand. This is not the total amount required of open space land, but only that required to meet the away demand for public outdoor recreation.

With the improved transportation which will exist in 2000, the regional distribution of these areas becomes less important. It is obvious, however, that Natural Environment areas will be concentrated in the less-developed parts of the Commonwealth and High Density facilities developed in the densely-populated metropolitan areas.

The need for public control or ownership of recreation lands will be much greater in 2000 than it is at present, because the private lands that now contribute to the Outdoor Recreation supply will be under much greater pressure to be developed for nonrecreational use. Much of the Natural Environment land now enjoyed by the citizens of the Commonwealth will be denied to future generations if it is not controlled or acquired by the public soon. This is true to a lesser extent of private General Outdoor and High Density areas.

In Metropolitan areas especially, the need for open space must be balanced with the need to provide recreation and the cost of land balanced with the cost of development. Acquisition priority should be given to areas that are needed and are in danger of being lost because of imminent development for other purposes. This, not possible future price increases, should be a prime factor governing priority of acquisition of needed areas.

Comprehensive Recreation Planning

A program of comprehensive recreation planning is required to reassess needs and update plans constantly. Prime elements in this program are the development of techniques to evaluate and forecast demand. The items outlined below are recommended for inclusion in the work program for that portion of the Commonwealth-wide plan dealing with outdoor recreation and open space lands.

A. DEMAND

(1) Make market studies of fluctuation in facility use for each region.

These studies must be undertaken early in the planning process in order to provide trend information by:

a. season, day, hour
b. age group
c. income group
d. resource class
e. activity

(2) Determine demand for various types of overnight accommodations for people on vacations and trips.

(3) Study demand for various types of recreation facilities for outings and at home use by:

a. residents of Commonwealth
b. vacationers

(4) Analyze the effect of public pricing policy upon:

a. facility use
b. private facilities providing for the same activities

(5) Develop demand indicators which can be kept constantly current.

(6) Study the special demands of the physically and mentally handicapped.

B. SUPPLY

(1) Prepare an In-depth town inventory. This should be given top priority, and should include capacity information by activity and resource class.

(2) Develop a method of keeping all inventories constantly current (including maps) and all information retrievable. This should include: Public Facilities Federal, Municipal, and Quasi-Public, as well as Private Facilities.

C. PUBLIC — PRIVATE

Continue analysis to determine which activities should be provided for by the public and which can be provided better by private facilities. Improve the means of inducing high quality private development in addition to controlling sanitation, traffic and nuisances.

D. STATE — LOCAL COMMUNITY

Continue study of the division between community and state provision of facilities and derive a definitive policy towards state aid to municipalities and determine the economic stratification of each community in order to evaluate its ability to provide needed recreation facilities. Develop data to show the importance of recreation and open space to the economic base as well as to the quality of the living environment.

E. RESOURCE DEVELOPMENT PLAN

Prepare a comprehensive program for long-range management of all of the natural resources of the Commonwealth. Prepare a completely integrated, detailed action program for the development of each separate resource, giving careful attention to the needs of, and effects on, all the other resources.

Of prime importance at this time are the water resources of the Commonwealth. Water is the most important single resource for recreation. When recreation needs for water are added to its other uses, the demand already exceeds the available supply. These water resources must be fully developed, and continued research must find new means of conserving water as well as improving the existing techniques. This research must include detailed studies of the geology, hydrology, and ground water of the region, as well as the effect of ground cover on run-off, percolation, evaporation and transpiration. Additional large reservoir sites should be located. Pollution abatement programs should be accelerated and water standards raised to provide more recreation opportunities.

The Great Ponds survey should be completed and the river system inventoried, and additional recreation opportunities developed along the rivers and streams and on the Great Ponds. The detailed ocean beach acquisition and development program should be updated and carried out.

Guidelines for Local Action

Local communities should develop outdoor recreation facilities and programs, with State assistance if necessary. These should serve 20 per cent of the population (an estimated 2,700,000 people) in the year 2000 on an average weekend day during the peak summer season. In general, development should provide capacity for each activity in the approximate proportion of projected demand. Studies of demand in local communities will have been completed by 2000 and often will indicate different distributions of demand in these communities than for the region as a whole. It is desirable to take these local differences into account whenever possible. First priority for development should be given to underprivileged areas.

In preparing its plan, a community should not include facilities of a regional nature owned by the State in its own supply as these areas are assumed to be part of the supply to meet away demand. In a balanced program these facilities should be developed to provide a greater and more unusual experience than can be provided locally. Local facilities should still be acquired to meet local preferences and needs.

2000 est pop = 9,270,000 20% = 1,854,000
Do they mean 30%?

Chapter VIII

THE FORCES OF IMPLEMENTATION

Introduction

Outdoor recreation in Massachusetts is provided through many agencies and individuals. This diversity lends variety and scope to the program and many doors are open to the Commonwealth in the process of implementing the proposed recreation plan. These range from conceptual and organizational aids to supplemental financing and specific planning assistance. Knowledge of the recreation program which is both broad in scope and deep in extent can be acquired only through a continuing, comprehensive recreation planning program.

Massachusetts Assistance Programs

Local communities will be called upon to meet a large share of the recreation needs of the State. The State should take immediate steps to determine needs at the local level and to expand the program of assistance. Guidelines to the municipalities concerning the amount and types of facilities required should be made available to the municipalities through the State. Assistance should also be available to municipalities to aid them in determining the means by which they may acquire or conserve their open space and recreation land.

The Commonwealth of Massachusetts has several programs which assist local governments in providing recreation and open space facilities for their citizens. The principal programs are:

1. The self-help Conservation Fund provides reimbursement up to 50 per cent of the cost of conservation projects.

2. The Division of Conservation Services provides advisory service to towns.

3. The Department of Natural Resources is authorized to encourage co-operation toward development of the Bay Circuit. The commissioner is authorized to implement the land acquisition portion of the Bay Circuit Plan but no funds have been appropriated specifically for this.

4. The Public Access Board constructs access facilities for operation by cities and towns. The Board's projects are eligible for Federal grants through the Housing and Urban Development Act of 1965 and the Economic Development Administration.

5. The Commonwealth reimburses towns for one-half of their one-quarter of the costs of urban renewal projects. (The Commonwealth share is thus one-eighth.) These

projects may include recreation facilities (see paragraph 1.4).

6. The Planning Division of the Department of Commerce and Development provides planning assistance to communities and administers the Federal Urban Planning Assistance Program in the Commonwealth.

7. The University of Massachusetts, in co-operation with county governments, conducts the educational programs of the Co-operative Extension Service of the U.S. Department of Agriculture. One of these programs is "Resource Development" of which outdoor recreation is a part.

Federal Assistance Programs

The Federal Government provides a wide variety of loan and grant-in-aid programs to assist state and local governments to meet their recreation and open space needs.

Most are assistance programs. In these cases the Federal Government does not plan or build facilities, but merely provides financial aid.

The actual dollar amount that the Commonwealth can realize from these programs cannot be stated because of the varying range of assistance available under each program, because of the fluctuation in appropriations for each program, and because whatever the appropriation, it is rarely enough to provide funds for every state and local project for which assistance is requested.

The rate at which federal funds will become available for recreation uses is also dependent upon the degree of U.S. involvement in other foreign and domestic activities. While "The fact that we live in a world that moves crisis by crisis does not," as ORRRC rightly emphasizes, "make a growing interest in outdoor activities frivolous, or ample provision for them unworthy of the nation's concern," it does make the magnitude of financial resources that will be available uncertain.

Careful study of Federal programs as they are amended over the years and of ways and means of assuring that the Commonwealth secures maximum benefit from them should be an integral part of the continuing recreation planning program. A staff position with the prime responsibility of providing information and advice on Federal Programs to operating agencies should be created.

These Federal assistance programs can be divided into three groups dealing with land, water, or both, and are outlined below.

I. PROGRAMS PRIMARILY FOR LAND AREAS

1. Fifty per cent of the cost of acquisition and development of land for recreation, conservation, or other public uses which conform to the comprehensive plan of that locality. This includes purchase and clearance of land in built-up areas for such open space needs as parks, squares and playgrounds (P.L. 89-117, Housing and Urban Development Act: open space land program).

2. Two-thirds of the cost of preparation of comprehensive recreation plans (Housing and Urban Development Act - Section 701). The Commonwealth should encourage communities to use these funds and to include complete and meaningful recreation programs in their master plans. Recreation plans more complete than those normally prepared are eligible for these funds.

3. Two-thirds of the cost of preparation of Community Renewal Plans (CRP), which assess present and future neighborhood needs on a city-wide basis and make general recommendations for meeting them. Parks and recreation facilities are among the items considered by a CRP (Housing and Urban Development Act).

4. If parks and playgrounds are integral parts of urban renewal projects and serve the needs of the project area, the cost of their construction can contribute to the local one-quarter share of the cost of the urban renewal project. The exact amount of credit depends upon the degree to which the facility serves the particular project.

5. Certain federal surplus lands are available to state and local governments through the General Services Administration at less than their fair market value.

6. Seventy-five per cent of the cost of removal of junkyards and billboards along federally assisted highways. Reduction of highway construction aid by 10 per cent occurs if billboard controls are not provided. Under this Act, billboards will be controlled within 660 feet of highways and junkyards within 1,000 feet: "Junkyards" include auto graveyards and garbage dumps, as well as junkyards themselves (P. L. 89-285, Highway Beautification Act).

7. Funds (up to 3 per cent of federal-aid highway money) for acquisition and improvement of land necessary for the restoration, preservation and enhancement of scenic beauty adjacent to highways and for publicly owned and controlled rest and recreation areas and sanitary and other facilities needed by the public (Highway Beautification Act, P. L. 89-285).

8. Two-thirds to 75 per cent of the cost of specific projects for neighborhood centers such as community or youth centers and other public buildings which provide recreation and other service to the neighborhood. Emphasis is placed upon projects which are so located as to be of special benefit to low income families (Section 703 of the Housing and Urban Development Act).

9. One-half of the cost of comprehensively planned urban beautification and improvement projects dealing with open space and other public lands (up to 90 per cent of cost is available for demonstration projects). Programs can include park improvements, street landscaping, tree planting, or improving squares and commons. These programs must be in addition to the average previous expenditures for such activities within the locality (Urban Beautification and Improvement Program, Section 706 of the Housing and Urban Development Act).

10. Fifty to 100 per cent of the costs for development of model supplementary educational centers, programs and services (P. L. 89-10, The Elementary and Secondary Education Act).

11. Technical and financial assistance for the planning, development and conduct of solid-waste disposal programs (Solid Waste Disposal Act, P. L. 89-277).

12. Small Business Administration loans (up to $350,000) for private recreation developments.

13. Federal funds can make up a major portion of the costs of those Community Action Programs that are designed to effect a permanent increase in the capacity of individuals, groups and communities afflicted by poverty to deal effectively with their own problems so that they need no further assistance. Recreational facilities can be included in over-all Community Action Plan Programming (P. L. 88-452).

14. Job Corps and VISTA volunteer programs provide Federal funds for education, work experience and vocational training in conservation camps and training centers (Titles I and VI of the Economic Opportunity Act, P.L. 88-452). Personnel can be available for State or local conservation activities.

15. Up to 75 per cent of the cost of recreation and other leisure time facilities for the elderly (P.L. 89-73, Older Americans Act).

16. One-half of the cost of soil studies conducted by the Soil Conservation Service of the U.S. Department of Agriculture. These studies include preparation of complete reports, including land capability maps indicating sewerable areas, areas suitable for residential, commercial and industrial use, and wildlife areas.

17. Up to 50 per cent of the cost of programs for music, drama, writing and other arts. These programs can form an integral part of recreation plans (P.L. 89-209, the National Foundation on Arts and Humanities Act).

II. PROGRAMS FOR LAND AND WATER AREAS

1. Fifty per cent of the cost of planning, acquisition and development of public outdoor recreation areas. The Land and Water Conservation Fund Act (P.L. 88-578) provides for urgently needed public outdoor recreation areas and facilities. The program became effective January 1, 1965 and will continue for twenty-five years, thus providing a continuing source of revenue. To be eligible for these funds, proposed projects must be in accord with the comprehensive state-wide outdoor recreation plan.

2. Interest-free Public Works planning loans (repayable upon construction) to assist in preparation of plans for specific facilities (Section 702 of the Housing and Urban Development Act).

3. Fifty to 80 per cent of the cost of public works that can be constructed in a short period of time is available to qualified areas (P.L. 89-136, "Accelerated Public Works" provisions of the Public Works and Economic Development Act). Recreation facilities, in order to be considered, must qualify primarily as tourist attractions or be important in attracting new industry. This act also provides for technical assistance, studies, research and information in needed areas, and establishment of regional commissions.

4. Cost sharing and payments to landowners for converting agricultural land to recreation, wildlife and open land (P.L. 89-321, Food and Agriculture Act).

5. One-half of the cost of land, easements and rights-of-ways for reservoir and other watershed areas to be managed by State and local governments for public recreation. Includes sanitary and other facility construction (P.L. 566, Small Water-Shed Program).

6. Loans may be made to local governments for public facility construction when private financing is not available on reasonable terms (Public Facility Loan Program).

7. Up to 50 per cent of costs for technical assistance and advice to encourage interstate and regional co-operation in planning, acquisition and development of outdoor recreation resources. U.S. Bureau of Outdoor Recreation (P.L. 88-29).

III. PROGRAMS PRIMARILY FOR WATER AREAS

1. One-half of the cost of developing comprehensive water (and related land) resources plans (P. L. 89-80, Water Resources Planning Act). This act also provides for a water resources council composed of Secretaries of Interior, Agriculture, Army, HEW, and Chairman of the Federal Power Commission to study water supply adequacy, and it authorizes river basin commissions for coordinated study and planning.

2. Reimbursement, cost sharing, and co-ordination of recreation, and fish and wild life planning and management by nonfederal agencies in Federal Water projects (P. L. 89-72, Water Projects Recreation Act).

3. Thirty per cent of the cost of waste treatment works up to a maximum $1,200,000 for a single project and $4,800,000 for a joint project to serve more than one municipality. This increases by 10 per cent if the project is approved by a metropolitan or regional planning agency as conforming with its comprehensive plan. Up to 50 per cent of cost of projects which will demonstrate new or improved methods of controlling discharges or untreated or inadequately treated sewage or other waste from storm or combined storm and sanitary sewers (P. L. 89-234, Water Quality Act of 1965).

4. Fifty per cent of the cost of construction of certain municipal sewage works (Section 702 of the Housing and Urban Development Act).

5. Seventy per cent of the cost (exclusive of land costs) or restoring and protecting shore parks and conservation areas (Rivers and Harbors Act).

6. Detailed flood plan information developed and provided by Corps of Engineers to serve as a basis for flood plain zoning in localities (P. L. 89-645).

7. Corps of Engineers reservoir construction and operation program.

8. The Bureau of Sport Fisheries and Wildlife will provide several species of warm water fish to establish self-perpetuating populations in farm fish ponds in order to provide recreational fishing and stimulate tourist activity (Fish and Wildlife Coordination Act of 1934).

9. Biological examination of fresh water lakes, ponds and streams used for sport fishing and specific recommendations based upon the conditions found. One or more species of fish from national fish hatcheries may be planted (Fish and Wildlife Coordination Act of 1934).

10. Grants and loans for 90 per cent of the costs of reclamation projects. The local 10 per cent may be in money, materials, labor or lands. These projects include multi-purpose dams for recreation facilities (P. L. 84-520).

Private Funds

Private Funds are an important source of financing for specific recreation and open land acquisition, protection, and development. At present, the help available from this source is not great, but there are indications that some of the established funds are taking an increased interest in recreation and conservation as activities in which to invest.

The Permanent Charity Fund was established in 1915 to serve the community in the field of human welfare. It is at present concerned primarily with assistance to such groups as settlement houses, hospitals, boy and girl scouts, camps, and family and children service associations. It partially financed the study leading to publication of the report Eighty Paces Forward: A Comprehensive Study of Open Space, Informal Outdoor Education, and Resident Camping Capital Needs for Non-Profit Agencies of Metropolitan Boston: 1965-1975. This fund also has made grants recently to "help preserve open spaces for future enjoyment of city dwellers"; one to Garden in the Woods in Framingham, and another to the Elbanobscot Foundation to save 200 acres of Sudbury River Valley land.

The Fund for Preservation of Wildlife and Natural Areas was established in 1961 to provide supplementary financial aid to local conservation activities by disbursing the gifts and bequests it accepts where they will be most effective. This fund has granted funds for the preservation of a natural watershed for nature study and as a prime fishing site, and for the preservation of a true bog of 116 acres. In addition, it has assisted the Commonwealth's Department of Education in producing a series of conservation booklets, one each for elementary, junior high and high school: 145,000 copies have been distributed. The fund also provides a color conservation film, "Our Wildlife Heritage," for group showings.

As interest in conservation grows it is to be hoped that the money available from existing funds will increase and that new ones will be established.

State Land Acquisition Policy

Acquisition of lands needed for major new and expanded park areas should be based on "official plans" that show the ultimate size clearly. The adoption of such plans is the fairest to all concerned, for property owners in the area will not be uncertain whether or not their land will be taken. The Commonwealth need not acquire all the lands at one time. After adoption of the official plans, acquisition by purchase could take place under a broad policy based as follows:

Priority A
(1) Unimproved property threatened by development or nonconforming uses.
(2) Bona fide hardship cases.
(3) Unimproved uplands offered for sale regardless of location.
(4) Unimproved property required for development purposes.

Priority B
(1) Improved property offered for sale.
(2) Unimproved uplands adjacent to large blocks previously acquired.
(3) Unimproved uplands not in Priority A or B(2).

Priority C
(1) Marshes.
(2) Town lands.

This is the method in use at the Cape Cod National Seashore. It would be especially appropriate in cases such as the consolidation of Harold Parker State Forest and in acquisition of a new park in the southwest corner of the Commonwealth.

A unique special procedure accompanied this acquisition policy at the Cape Cod National Seashore. There, the right of eminent domain was waived with respect to certain improved property "during all times when the respective town shall have in force and applicable to such property a duly adopted, valid zoning bylaw" that conforms to the CCNS Plan.

Acquisition Less than Fee

The public can acquire limited rights to open space through the purchase of easements and rights-of-way. It is not always necessary, or desirable, that the public own all open areas in fee simple. The wide variety of easement and right-of-way arrangements available are often overlooked. They range from those allowing unlimited public access across private lands to those which leave the property owner almost full use of this land. The costs also vary greatly, some being as high as fee acquisition.

Whether right-of-way, easement, or acquisition in fee is the best way to assure the preservation of a particular vista or open tract will depend upon careful examination of each area. It is important, however, to consider all these methods and to weigh carefully the differences in cost and benefit.

Tax Deferral

Tax deferral may be a useful tool in preserving areas indicated on a community's long-range comprehensive land use plan as "open land."

Under this method, payment of a portion of the taxes due on land zoned for open use is deferred as long as it is kept open. These back taxes must be paid if the land is developed in a way not compatible with the community's plan.

A special commission has investigated and reported on the taxation of forest land, farm land and open space land. The Commissioner of Commerce and Development was Chairman, and the other members were the Commissioners of Agriculture, Corporations and Taxation, and Natural Resources, and three gubernatorial appointees (one a Representative of the Massachusetts Farm Bureau Federation, and one a Representative of the Massachusetts Federation of Taxpayers Association, Inc.). The commission specifically considered "the preservation of open spaces, in private ownership through postponement of payment of part of the real property taxes on "classified open land" until the restrictions on open use of such lands are changed or relaxed." The report of the commission should be given careful consideration.

Zoning

Zoning is basically a means of insuring that the various land uses of a community are compatible with one another and that an adequate amount of space is reserved for each use. It is one of the most important tools by which a community can carry out its long-range comprehensive land use plan.

Zoning is a use of the regulatory power of the community and must be based upon the promotion of public health, safety or welfare. It should not be used as a substitute for acquisition of lands needed for public purposes, but as a means of protecting and complementing them. Zoning is generally upheld in the courts, but the courts rightly consider the particular facts in each case.

The zoning classifications which are most commonly known are "Residence," "Business," and "Industrial"; however, many special types of zoning have particular value in carrying out the objectives of the Massachusetts Outdoor Recreation Plan on the community level:

1. In communities in which agriculature can be clearly shown to be of vital importance, development that is not related to agricultural needs can be excluded from the best agricultural lands by the establishment of agricultural districts.

2. Zoning may be used to preserve and protect areas that can be clearly shown to be scenic amenities to the community.

3. In 1960, the General Court passed legislation permitting communities to establish "Historic Districts" for the "preservation and protection of buildings, sites and districts" and "the development of appropriate settings for such buildings, places and districts." Communities should be encouraged to apply this legislation wisely.

4. So-called "Industrial Parks" can, if carefully controlled, contribute to the visual open space of a community even though little or none of the space is available for active public use.

5. Large-lot zoning can often go far towards preserving visual open space, but as an Urban Land Institute study prepared by M. I. T.[1] stated:

   > If what is needed is extensive and permanently preserved open space to serve as breaks in the cityscape, to give identity and individuality to peripheral communities, and also to set aside areas of natural scenic beauty for the enjoyment and use of metropolitan populations, large lot zoning will of itself not satisfy these objectives. It would take lot sizes of perhaps five to ten acres to effectively accomplish this.

   Large-lot zoning, and indeed all zoning, can be most effective and on surest legal ground if it is carefully integrated into a comprehensive community or regional plan.

6. In addition to the open space that can be obtained in residential areas through such devices as large-lot, agricultural, and flood-plain zoning, specific "open space districts" can serve a valuable function. Their inclusion, where appropriate, in local ordinanaces should be encouraged.

   The creation of exclusive open space zones for existing parks, watershed protection areas and other open space areas shown on a community master plan, has been suggested by Charles W. Eliot of Harvard as added protection to these public and private areas. The town of Manhattan Beach, California, recently had the exclusive recreation zoning of certain of its ocean frontage upheld in the courts.

   Such districts in other states have various titles, such as open space districts, conservation districts, and recreation-forestry districts. A study by the American Society of Planning Officials in 1963 indicated a wide range of permitted uses in these districts. Most of the uses require little land coverage by structures, thus creating a visual pattern of openness. Unlike large-lot residential districts these districts do not depend exclusively upon size to achieve openness. Such districts could permit the following uses: Farming, parks, golf courses, forest preserves, wildlife refuges, and in certain towns schools, churches, watershed protection areas, and forest industries.

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[1] "Effects of Large Lot Size on Residential Development," M. I. T. Technical Bulletin No. 32.

Special approval should be required if uses such as the following are included in the open space districts: quarries, mines, commercial recreation facilities, stadiums, fairgrounds, sanitary landfill and sewage treatment plants.

Zoning has powerful open space potential, but must be carefully integrated with the other open space tools.

Improving the Outlook for Private Investment

State (or other governmental) activities can stimulate private investment (or participation) in the provision of outdoor recreation facilities. Some of these activities might be to:

1. Construct ski area access roads.

2. Improve ponds, river channeling, and harbors in accordance with development plans.

3. Conduct forest management and harvesting program with accompanying logging roads providing access to "wilderness" camping areas.

4. Acquire and develop boat access points.

5. Construct reservoirs accompanied by access points and recreation facilities.

6. Construct or encourage concession facilities in existing areas.

7. Develop the scenic highway system — signing routes, and updating and republishing the tourist route maps, providing vista points, and controlling roadside beauty.

8. Assist in development of additional Freedom Trails.

9. Increase advertising efforts to bring people to Massachusetts to use public and private facilities.

10. Link improvements to user-charge increases, to emphasize how these revenues are used to provide facilities.

11. Help private groups and service organizations such as the Y.M.C.A., Boy Scouts, Izaak Walton League, Sportsmens Clubs, etc. to develop and use their own lands.

12. Avoid setting up public facilities in competition with existing private facilities. The level of development and pricing should make private facilities profitable at an attractive level of development.

13. Prepare development plans for particular public areas and put them out to bid for private development and operation under public scrutiny.

14. Encourage the use of State and local law-enforcement personnel to help prevent vandalism on private areas during the off-season.

15. Provide technical assistance for specific planning and design projects.

Education for Outdoor Recreation

Education in and for the outdoors should be an integral part of the curriculum. This will require an increasing emphasis in primary and secondary schools on education for recreation and conservation.

In the past, activities such as outdoor skills suitable for individual participation (in contrast to teams and groups) have been neglected in most school programs in favor of competitive athletics, games, and formal gymnastics. It has been widely assumed that the home and community agencies would provide the opportunities for individual outdoor pursuits such as fishing, skiing, and boating. But with the shift of population to the cities and the changing patterns of work and leisure, it has now become apparent that children need to be taught recreation skills at school.

The school's responsibility in the field of outdoor recreation should be to:

1. Provide an awareness of man's place within the total natural environment.

2. Teach the wise use of outdoor recreation resources.

3. Teach outdoor skills, knowledge, and attitudes for maximum satisfaction in outdoor pursuits.

4. Support a sound program for acquisition and development of adequate outdoor recreation resources.

This responsibility should not end with the education of children, but should include adult education as well.

The teaching of outdoor sports and skills will have great effect on the outdoor resources of the nation. It will provide for resource care and protection, as well as to increase their use, because a sizable portion of the population will have a background for developing continued interest in outdoor activities. This kind of education will be the best guarantee that people will know how to use these resources properly and to protect them for future generations.

APPENDICES

Population Projections

Several population projections for Massachusetts were considered in the process of determining which would be most adequate for the requirements of the Massachusetts Outdoor Recreation Plan. These included: (1) Regional projections prepared by Regional Planning Commissions as well as projections prepared as part of Regional Planning Projects, (2) The Corps of Engineers' recently published projections to the year 2020 for all New England states and four regions in Massachusetts, and (3) Projections of the national population by state prepared by the Census Bureau.

Regional population projections are available for most of Massachusetts. In assessing the value of these forecasts for the recreation study their relation to population levels for the state as a whole was considered. The following question was posed: Will these projections serve as reasonable guides in forecasting population for the state as well as the seven regions with which this study is concerned?

As indicated in Table P-1 the regional areas for which forecasts are available represented 86% of Massachusetts' 1950 population and 87% of the total in 1960. Since the major metropolitan areas in the state are included in this group, a gain in representation is expected. The increasing metropolitanization of the nation is a well documented occurrence and is expected to continue well into the future. A reasonable assumption concerning the future population of the regions for which projections are available is that, as a group, they may be expected to continue to increase their share of the State's population. Assuming that the increase will continue as in the 1950 decade, that is, gain 1% of the total state population in each ten years, as a group, the regions would contain 89% of Massachusetts 1980 population; and by implication the population of the state would be 6,114,000, a gain of 19% in twenty years. Expected gains for the nation between 1960 and 1980 amount to 36%. Massachusetts 1950-60 gain, of 10%, compared with an 18% national increase. Therefore, a population level of 6,114,000 implies that Massachusetts will not compare as well with national growth rates in the future as it did in the past. On the other hand independent forecasts contradict this prospect. The Bureau of the Census expects a 1980 population for Massachusetts of 6,462,000, or a 20 year gain of 25%. The Corps of Engineers are somewhat more optimistic and forecast a Massachusetts 1980 population of 6,770,000 or a 31% gain. Both of these projections imply that Massachusetts will more nearly approach growth rates expected for the nation as a whole.

As reflected in population levels expected by the Census Bureau and the Corps, the future seems fairly bright for Massachusetts. On the other hand population levels derived from the regional projections appear to be somewhat less optimistic. Use of the regional projections appear to be somewhat less optimistic. Use of the regional projections in forecasting

TABLE P-1. MASSACHUSETTS REGIONAL AND STATEWIDE POPULATION PROJECTIONS: COMPARISONS

Region	1950	1960	1970	1980	1990	2000
Berkshire County	132,966	142,135		181,520		205,860
Lower Pioneer Valley [1]	423,972	498,500	553,700	603,900		
Worcester Area	317,678	339,800		425,800	468,500	
Merrimack Valley	125,935	127,089	142,000	158,300		
Boston Region	3,005,065	3,308,900	3,596,000	3,965,700		
Barnstable County	46,805	70,286		106,400		
Regional Total	4,052,421	4,486,710		5,441,620		
Regions/Mass. %	86%	87%				
Massachusetts						
Derived [2]				6,114,000		
Census Bureau	4,690,500	5,149,000		6,462,000		
Corps of Engineers				6,770,000		9,270,000

1. Average of high and low projections.

2. Derived from projections for above listed regions - see text.

Sources:

1. Berkshire County: "Berkshire County: The Regional Plan," Dec., 1959, Prepared for the Berkshire County Commissioners and the Massachusetts Department of Commerce, by Technical Planning Associates.
2. Lower Pioneer Valley: "Population," March, 1965, Prepared for the Lower Pioneer Valley Regional Planning Commission by the Planning Services Group.
3. Worcester Area: Projections prepared by the Regional Planning Commission, Central Massachusetts Planning District.
4. Merrimack Valley: Projections prepared by the staff of the Central Merrimack Valley Planning District.
5. Boston Region: The Boston Regional Survey: "Regional Population Trends," June, 1962; Prepared for the Mass. Transportation Commission, Commonwealth of Massachusetts by The Planning Services Group. The projections presented here exclude the Merrimack Valley area.
6. Barnstable County: "Cape Cod 1980, A Sector of the Massachusetts State Plan, 'August, 1963, Prepared for the Massachusetts Department of Commerce, Barnstable County Commissioners, and the Cape Cod Economic Development Council by Blair Associates Incorporated.
7. Census Bureau: U.S. Department of Commerce, Bureau of the Census, "Current Population Reports, Population Estimates, Series P-25, No. 301," February 26, 1965; Series IIB.
8. Corps: "Projective Economic Study of the States of New England Connecticut River Basin Comprehensive Survey," Prepared for the Corps of Engineers, U.S. Army Engineer Division, by Arthur D. Little.

statewide population would deflate expectations for participation in recreation activities. However, for planning purposes the preferred direction of error would be an expectation of more activity than will occur rather than less.

It was decided that the Corps of Engineers' forecasts for Massachusetts and four regions within it would provide an adequate guide in determining projections for the seven regions in the Recreation Study. Several judgmental factors were involved in this selection. First, optimistic projections imply that activity will take place which has not in the past, and this will stimulate economic and population growth. Many programs are currently underway which are expected to have profound effects on the New England economy. The water resources projects alone have tremendous meaning for economic development. Thus, while these projections may appear optimistic at the present time (in light of past trends) in fact, if our present plans for development take effect the forecasts will be reasonable.

The Corps' forecasts also include the remaining New England states and permitted an assessment of movement for recreation purposes. New York, New Jersey, and Pennsylvania, being within a day's drive of Massachusetts, are also included in the study area. Census Bureau's forecasts for these three states were used. Forecasts for 1980 are based on the Census Bureau's population estimates found in the P-25 series and the ORRRC Report #23 provided the year 2000 forecasts for the three states.

The Corps of Engineers' regions closely match broad regional areas in the recreation study. Recreation regions one and seven are within the Corps' region M-R. Recreation region two is coterminous with M-I. Recreation regions four, five, and six are entirely within Corps region M-3. Recreation region three is larger by seven communities than Corps region M-2. These seven communities are referred to in the rest of the discussion as overlapping communities.

The basic method used in allocating the Corps' four regional projections to the seven recreation regions involved trending the 1950 and 1960 ratios of the appropriate recreation region to the Corps region. The ratios were carried forward arithmethically to the year 2000.

The following steps were carried out:

1. The ratio of the overlapping communities' population for 1950 and 1960 to Corps region M-3 was trended arithmetically to 1980 and 2000. The resulting ratios, multiplied by the projections for M-3, provided the total projected population for the overlapping communities. This was added to the projections for Corps' region M-2 providing a projection for recreation region three.

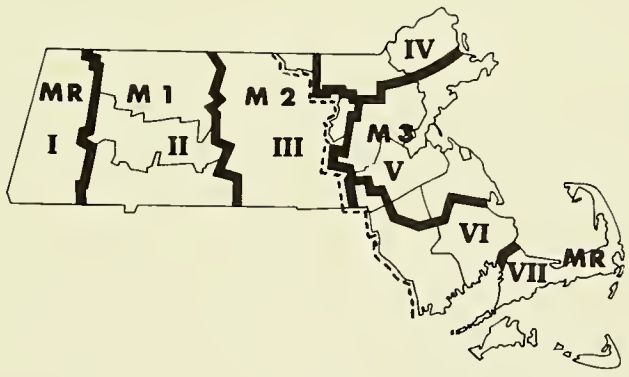
2. The total population projected for the overlapping communities was subtracted from Corps' region M-3. Using the method described above, ratios for recreation regions four, five and six were applied to the adjusted Corps region M-3.

3. Projections for recreation regions one and seven were derived by computing ratios of each region to the Corps region M-R. Here the 1960 population related to Otis Air Force Base (Army personnel and their families) was held constant since the growth of this group during the 1950 decade led to an unusually high population projection for region seven and a concomitantly low population for region one. Justification for this assumption is presented in the Cape Cod study cited above.

The resulting population projections are presented in Table P-2.

TABLE P-2. POPULATION PROJECTIONS FOR MASSACHUSETTS RECREATION REGIONS AND CORPS OF ENGINEER REGIONS

	Population (in 000's)			
Recreation Region	1950	1960	1980	2000
1	133.0	142.1	184.6	229.2
2	508.3	587.4	757.0	1,010.0
3	584.5	625.5	819.7	1,112.0
4	370.0	418.1	588.1	863.1
5	2,606.2	2,833.4	3,701.0	5,065.4
6	432.6	462.2	583.2	769.5
7	56.0	79.7	133.4	216.8
Corps of Engineers Region				
M-1	508.3	587.4	757.0	1,010.0
M-2	546.4	583.2	762.0	1,030.0
M-3	3,446.9	3,756.1	4,930.0	6,780.0
M-R	188.9	221.8	318.0	446.0
Total	4,690.5	5,148.6	6,767.0	9,266.0



Demand

DETERMINATION OF DEMAND FOR OUTDOOR RECREATION
IN 1960 AND FORECASTS FOR 1970 AND 2000

I. SUMMARY: Convert ORRRC data for 1960 dealing with recreation occasions to estimates of total recreation days for persons 12 years of age and over.

The first step in the process of estimating demand for outdoor recreation involved the conversion of recreation occasions (as defined by ORRRC) to recreation days. The ORRRC reports treat demand as the number of separate activities engaged in on a day. The total number of recreation occasions represents the sum of each recorded occasion for separate activities. ORRRC did not determine the number of occasions per person. While occasions represent a measure of demand for recreation they cannot readily be interpreted in terms of capacities of existing recreation facilities. Nor, do occasions provide a unit measurement which can be used in estimating development or acquisition requirements for a statewide recreation program. Estimates of the number of recreation days make it possible to measure the number of persons likely to have a demand for a recreation facility on a typical day in the peak season.

In regard to developing a meaningful measure of demand, not only was it important to determine an estimate of recreation days but it was necessary that this measure represent activity on a day which would be fairly typical of facility use on a moderate-to-peak day. An estimate of demand for an average weekday would underestimate the demand which occurs on a weekend day. Peaking factors, discussed in detail later, were used to estimate activity on a weekend day. They were based on visits to state and local recreation facilities (ORRRC Report #1). A day, as defined here, is longer than an occasion and thus more similar to a visit. In addition, the concept of days appears to have more conceptual meaning than occasions when thinking about demand as it relates to capacity.

The ORRRC survey data provided the total number of recreation days away from home by season as well as the total number of occasions by season. The survey did not produce data which could be directly used to estimate the total number of recreation days. Two assumptions were required to adapt the data to our needs:

1. The distribution of time away from home by season can serve as a guide in separating out the number of occasions which would be allocated to persons recreating away from their home, vs. those recreating near home. Clearly, the higher the proportion of days spent away in a particular season the higher the proportion of occasions by persons away from home.

2. The assumption was made that occasions per day, for persons recreating away from home when estimated, could be averaged for the four seasons, and applied to total

annual recreation occasions to provide an adequate estimate of total recreation days.

TABLE D-1: CONVERSION OF RECREATION OCCASIONS TO RECREATION DAYS, 1960

	GIVEN			ESTIMATED	
	Days Away From Home		Total Annual Recreation Occasions	Occasions Away From Home	Occasions Per Day
	Number	Percent Of Total			
Total	14.55	100%	91.08	26.27	
Summer	7.45	51	32.82	16.74	2.25
Autumn	3.50	24	19.25	4.62	1.32
Winter	1.60	11	18.22	2.00	1.25
Spring	2.00	14	20.79	2.91	1.45
					$\bar{x}$=1.568

Average Occasions Per Day for Persons Away from Home 1.568

A. 91.08/1.568 58.09 Total number of recreation days.

B. Total Days 58.09
Away Days -14.55
Home Days 43.54

C. Total Occasions 91.08
Away Occasions -26.27
Home Occasions 64.81

Source: ORRRC Report #19 (Given Data)

As can be seen in Table D-1, the ORRRC reports found that 91.08 recreation occasions occur each year for each person twelve years of age and over. The ORRRC reports also indicated that 14.55 days per year are spent on vacations, trips and outings by each person twelve years of age and over. Distributions were also available for both occasions and, days away from home, by season.

It was determined at the outset of this study that not only was it desirable to deal with demand in terms of recreation days but that it would be most useful to separate these days into recreation away from home and recreation occurring near home in less than eight hours. Home based recreation is best satisfied by local facilities while recreation occurring on a vacation trip or outing is more likely to be oriented toward larger federal and state facilities.

Since 51% of the days away from home occurred in the Summer, it was assumed that the same proportion of all recreation occasions could be allocated to persons recreating away from home in the Summer. Following this procedure for each season a measure of occasions per day, per season for persons recreating away from home was derived. The seasonal figures were averaged and indicated that approximately one and one-half occasions took place on a day. When applied to total annual recreation occasions, 58.09 total annual recreation days are derived. Subtracting days away from home from this figure indicates that 43.54 recreation days occur annually near home. The estimate of recreation days involves several assumptions which are open to question. Therefore, as a check on the reasonableness of the conversion of recreation occasions to days the division between home and away hours spent on outdoor recreation was compared with the division of estimated

recreation days at home and away.

The ORRRC survey (#19) contains data on total leisure time available and leisure time spent on outdoor recreation on weekdays, weekend days, and holidays for each season. This distribution is presented in Table D-2. Seasonal data were converted to total hours and summed for all seasons. Vacation time spent on outdoor recreation was divided into that which would be spent at home and that most likely to be spent away from home: All vacation and holiday time was considered as time likely to be spent away from home. All weekday time spent on outdoor recreation is, by its nature, confined to activity near home. Weekend time can be spent both near and away from home. There is no concrete guide-line indicating the proportion for each type. Therefore weekend time was allocated one-half to home and one-half to away activity.

The resulting distribution (see Table D-2) indicates that 29% of all time spent on outdoor recreation was away from home. The distribution of recreation days indicates that 25% of the total were away from home. Both of these estimates are based in part on judgmental factors. However, the fact that they were derived separately, yet indicate the same relative relation between home and away recreation activity indicates that it is reasonable to assume that outdoor recreation occurs on approximately 58 days of the year and home based activity on about 44 days.

The ratio of hours per day spent on recreation when computed for both home and away activity indicates that a recreation day consists of 4.7 hours for persons recreating on vacations, trips, and outings and 3.8 hours for persons recreating near their homes. In other words persons recreating away from home engaged in recreation for a somewhat longer period of time than persons recreating near their homes. This relationship appears logical since it indicates that the focus on outdoor recreation is greater on a vacation, trip or outing than when recreation occurs near home where there is likely to be greater competition from non-recreation of indoor recreation pursuits.

II SUMMARY: ALLOCATE TOTAL RECREATION DAYS TO ACTIVITIES.

In order to estimate recreation demand for separate activities it is necessary to establish a distribution of days per person for these activities. ORRRC determined the frequency of occasions for recreation activity (report #19). Recreation days were allocated to activities by simply distributing the estimated 58.09 recreation days on the basis of the distribution of the total number of annual occasions, 91.05 (See Table D-3).

Activity days for persons recreating away from their home (14.6) were determined for all activities by using percent distributions of data dealing with the major purpose of trips and outings reported in the ORRRC report #19, (page 363). The distribution of major purposes of trips and outings, presented separately, were averaged. Broad purpose categories such as "no particular reason", "other purposes" and "rest and relaxation" were allocated in a first round estimate on the basis of the percent distribution for total recreation days; using appropriately matched groups of activities. This distribution was altered by considering that many activities could be engaged in on a trip, outing, or vacation without constituting the major purpose of the excursion. The final determination of days of recreation by activity for persons away from home was based on judgment concerning a reasonable relation between total recreation days and away days for each activity. The results are presented in Table D-3. The distribution for persons recreating near their home was determined by subtracting estimated "away" days from estimated total days.

Table D-2: ESTIMATES OF TIME SPENT ON OUTDOOR RECREATION AND ALLOCATION TO "AWAY" AND "HOME" TIME, 1960.

	Hours Per Day Per Person 12+*		Total Hours Spent
	Leisure Time	Leisure Time on Outdoor Recreation	on Outdoor Recreation[1]
Spring			
Weekday	2.75	.25	15.75
Weekend Day	4.50	.75	20.25
Holiday	3.50	.50	.79
Summer			
Weekday	4.00	.75	47.25
Weekend Day	4.75	1.50	40.50
Holiday	5.25	2.00	3.14
Autumn			
Weekday	3.25	.50	31.50
Weekend Day	5.00	1.25	33.75
Holiday	6.00	1.75	2.75
Winter			
Weekday	2.50	.25	15.75
Weekend Day	4.50	.75	20.25
Holiday	5.00	.75	1.18

ALLOCATION TO "AWAY" AND "HOME" TIME, 1960

Annual Hours Spent on Outdoor Recreation			Hours	Percent
		"Away"		
Weekday	110.25	Vacations	30.40	
Weekend Day	114.75	Holidays	7.86	
Holiday	7.86	One Half Weekend Time	57.37	
Vacation[2]	30.40	Total	68.32	29%
		"Home"		
		Weekday	114.75	
		One Half Weekend Time	57.38	
		Total	167.63	71%
		TOTAL	235.95	100%

* Source: ORRRC Report #19, Tables, 1.34, 2.34, 3.34, 4.34.

[1] Calculation of hours is based on: 63 weekdays, 27 weekend days and 1.57 holiday days in each of the four seasons. (There are 6.3 holiday days per year).

[2] There are a total of two weeks paid vacation (Report #23) time; assume 80 leisure hours. Recreation hours are estimated to account for 38% of the total or have the same ratio of leisure time to outdoor recreation time as holidays in the summer.

Table D-3: RECREATION BY ACTIVITY: OCCASIONS AND ESTIMATES OF RECREATION DAYS PER PERSON 12+, UNITED STATES, 1960

Activity	Total Annual Occasions	Occasions: Percent in Peak Season	Annual Recreation Days		
			Total	Away	Home
		%			
O. D. Concerts	.39	54	.25	.07	.18
O. D. Sports	3.75	35	2.39	.82	1.57
Bicycle	5.17	30	3.30	.77	2.53
Boating	2.18	56	1.39	.73	.66
Camping	.86	53	.55	.55	--
Driving	20.73	32	13.23	3.12	10.11
Fishing	4.19	47	2.67	1.66	1.01
Hiking	.42	62	.27	.04	.23
Horseback Riding	1.25	34	.80	.04	.76
Hunting	1.86	43	1.19	.74	.45
Nature Walk	2.07	36	1.32	.44	.88
Picnicking	3.53	61	2.25	1.25	1.00
Playing Games	12.71	29	8.11	.43	7.68
Sightseeing	5.91	37	3.77	1.06	2.71
Swimming	6.47	80	4.13	1.85	2.28
Walking	17.93	27	11.44	.76	10.68
Water Skiing	.41	73	.26	.13	.13
Ice Skating	.55	95	.35	.04	.31
Sled Riding	.51	86	.33	.04	.29
Snow Skiing	.07	95E	.04	.03	.01
Mountain Climbing	.09	62	.06	.03	.03
TOTAL	91.05	35	58.09	14.6	43.49

E= Estimated

Source: ORRRC Report #19, Tables 1.01, 2.01, 3.01, 4.01. Percents were calculated from data in these tables.

III SUMMARY: DETERMINE TOTAL RECREATION ACTIVITY IN MASSACHUSETTS AND ALLOCATE TO REGIONS.

The activity of persons recreating near their homes in Massachusetts in an eight hour or shorter time period is a function of the population of each region. Thus it is assumed that "home" based recreation will occur in the region of residence.

The number of persons recreating away from their homes in Massachusetts on vacations, trips, and outings was determined for the state as a whole and allocated to regions.

The total number of "away" days spent in Massachusetts in 1960 was determined by considering the Northeast as a total unit. It was assumed that all of the vacation, trip, and outing activities generated by residents of the Northeast would be satisfied in the Northeast.

A study of Cape Cod found that 92% of the visitors to the Cape were residents of the Northeast.[1] In addition, a study of the skier market in the Northeast indicated much the same proportion for skiing.[2] Obviously, the farther west in the region one moves the greater the probability that vacations and trips will occur outside the Northeast. However, the probability that persons to the west will spend their time in the Northeast increases. Thus, for the purpose of allocating vacation, trip, and outing days to states, the Northeast seemed to be an adequate and justifiable universe.

In the allocation process several assumptions were made.

1. Persons on vacations would tend to be distributed in the Northeast on the basis of the number of seasonal homes in each state. Seasonal homes are one of the few items of published data available for small areas as well as states which can serve as a guide to the distribution of vacation activity. Seasonal homes are concentrated in areas which not only attract long term summer residents but also persons on a traveling vacation or short term trip. Furthermore, the larger the geographic region being considered the greater the probability that seasonal homes are a valid guide to vacation activity. For example, if a community were the geographic entity for which demand was to be estimated vacation home distribution might be a poor guide. Small areas are more likely to be subject to variations in local restrictions or pecularities of locational patterns. Thus one community in a popular vacation area might have a concentration of vacation homes while another would have few. The larger the area the more likely local differences are to cancel out and if this larger area does constitute a popular vacation spot there will be a concentration of of seasonal homes. The smallest region in this study is the size of a county and most are groupings of counties.

2. Hotels and motels can be used to distribute trips in the Northeast to Massachusetts. Trips, which involve at least one night away from home, are likely to be attracted to areas with concentrations of transient (tourist) facilities as well as those where vacation homes are found. Hotels and motels accommodate the transient trade and concentrate in two types of areas: vacation and urban centers. Therefore, the use of hotels and motels to distribute trips to states in the Northeast would take account of the pull of major urban regions as well as vacation areas for recreation purposes. In addition, as is the case for vacation homes, hotels and motels are among the few items of published data available for the range of geographic levels, states through counties, with which this study deals.

3. It was assumed that outings which involve an eight hour or greater period (but no overnight stay) away from home would tend to remain within the state of residence or, at the state level, crossings would cancel out. Therefore, total outing days in Massachusetts are a function of population.

The total number of days per person spent on vacations (6.4), trips (2.0) and outings (6.2) were multiplied separately by the population (aged 12+) of the Northeast to derive a total number of recreation days. These were allocated to Massachusetts according to the procedure described above using percent distributions of vacation homes, hotels, and motels and population. The results represent the total number of days spent in Massachusetts by persons twelve years of age and older who were recreating away from their home. Days

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1 The Commonwealth of Massachusetts, Department of Public Works: Cape Cod Tourist Study. Prepared in cooperation with the U.S. Department of Commerce and the Bureau of Public Roads.

2 U.S. Department of Commerce, Area Redevelopment Administration: The Skier Market in Northeast North America (February 1965).

away were allocated to each region in Massachusetts according to the regional proportion of the state's seasonal homes.[1]

Finally, the estimates of total days spent on vacations, trips, and outings in Massachusetts were converted to persons on vacations, trips, and outings. Participation rates per person can be applied to these figures to derive recreation activity distributions.

The assumptions made in allocating total recreation activity to regions in Massachusetts are rather general and were adopted primarily because of a lack of adequate guide data published on the regional level. However, the method is logical and appears to provide reasonable results. Unfortunately, the collection of survey data taylored to the needs of a recreation study was impossible.

IV. SUMMARY: Develop measure of demand which can be interpreted in terms of use on a peak season day.

The participation ratios presented above (Table D-3) provide a statement of the frequency with which a person twelve years of age or older engages in recreation activities. These frequencies applied to population data produce the total number of recreation days in a year. Activity, however, does not occur at a uniform rate throughout the year or throughout a particular season. Peaking occurs by season and by day of the week. (In addition to time of day). An estimate of demand on an average weekday would far underestimate the demand on a weekend day, and would fail to provide a measure on which needs could be based. An estimate of activity on an average weekend day during the peak season was required.

There is a paucity of data dealing with recreation participation at the state level. Attendance records, when maintained, are often incomplete and have little validity for regional application. A broad applicable and reliable guide to differential recreation participation according to day of the week is available in the ORRRC Report #1 which deals with public outdoor recreation areas. Utilizing these data it is possible to determine a proportion of recreation activity occurring on a weekend day in the peak season. When applied to recreation days in Massachusetts a practical estimate of recreation demand can be made.

The peaking factors are derived and presented in Table D-4. Data for state and local management areas were treated separately because it was felt that activity away from home would be better represented by attendance at state facilities (federal facilities were excluded because there is only one in Massachusetts) while recreation activity near home is more likely attracted to locally managed areas. As can be seen in the table, 52% of visits to state managed areas occur on a weekend. Assuming that a season consists of 90 days and 26 weekend days, 2% of all activity would occur on an average weekend day. This proportion, when applied to the number of persons engaging in a particular activity in the peak season, provides a measure of demand for recreation on an average weekend day in the peak season for persons recreating away from home. As can be seen, the factor for home based recreation demand is somewhat higher than that for persons recreating away from home. Home based demand concentrates somewhat more on weekends than demand by persons on vacations, trips and outings. This difference is logical in that persons traveling away from

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1. Where county and regional boundaries matched in Regions 3, 4, 5, and 6 census data were used directly. Where regional boundaries did not coincide with county boundaries, county groupings were used as controls and metropolitan area vacation home data in conjunction with vacation home densities were used to determine regional totals.

TABLE D-4: TOTAL ANNUAL DAYTIME VISITS TO STATE AND LOCAL RECREATION AREAS AND DETERMINATION OF RECREATION WEEKEND DAY ACTIVITY, 1960

Management Level	Average Weekday Visits	Total Weekday Visits		Average Weekend Day Visits	Total Weekend Day Visits		
		Number	Percent of Total		Number	Percent of Total	
State	1442	7210	48%	3878	7756	52%	100%
Local	518	5290	44	1583	3166	56	100%

A. State Level
52%/2 = 26% Visits on single weekend Days
26%/13 = 2.00% Visits on average seasonal weekend day.

B. Local Level
56%/2 = 28% Visits on single weekend days
28%/13 = 2.20% Visits on average seasonal weekend day.

Note: Each season consists of approximately 90 days with 13 single weekend days.

Source: ORRRC Report #1, Table 36, p. 45.

their homes have wider time spans in which to recreate, while home based demand is influenced by the workweek and as such is more restricted to weekends, for those who are in the labor force. These two factors .020 and .022 were applied to the total number of recreation days occurring in each activity in the peak season. A separate peaking factor was computed for camping (ORRRC Report #1). Camping peaks less than other activities and a factor .015 was applied to camping days.

The peaking factors for 1960 are also used in the forecast of recreation activity. It is realized that longer vacations, shorter workweeks and the possibility of staggered workweeks may well affect these factors so that peak demands will be lessened. However, radical changes are not expected to occur before 1970 by which time additional data will be available to update this study. In addition, peak activity represented here is well below the peak on a particularly busy weekend day, rather it is the peak for an average summer weekend day. Thus, there is little chance that an over supply of recreation facilities will be recommended.

V. SUMMARY: CONVERT ANNUAL DEMAND TO SEASONAL DEMAND FOR 1960 AND FORECAST TO 1976 AND 2000

Forecasts of recreation activity were derived through the same procedure as were the estimates for 1960, making appropriate substitutions. Recreation days expected to occur in Massachusetts by persons "away" from their homes were estimated by applying forecast vacation and trip days per person to the forecast population of each state in the Northeast. These were allocated to Massachusetts on the basis of the 1960 distribution of vacation homes and hotels and motels. Outing days in Massachusetts are assumed to

TABLE D-5

FORECASTS: DETERMINATION OF RECREATION DAYS PER PERSON 12 YEARS OF AGE AND OVER, IN PEAK SEASON: TOTAL, "HOME" AND "AWAY" DAYS

1. Determine Total Peak Season Recreation Days Per Person 12+
   Source: ORRRC Reports #26 and #19, p. 22.

A. Given Data: 1960

Annual Recreation Occasions[1]	91.05
Peak Season Occasions[1]	34.61
Estimated Annual Recreation Days	58.09

Solve: 58.09/91.05 = X/34.61, X = 22.09 Total Recreation Days in Peak Season, 1960

B. Given Data: 1976
41.35 Peak Season Recreation Occasions[1]

Solve: 22.09/34.61 = X/41.35, X = 26.40 Total Recreation Days in Peak Season, 1976

C. Given Data: 2000
50.15 Peak Season Recreation Occasions[1]

Solve: 22.09/34.61 = X/50.15, X = 32.01 Total Recreation Days in Peak Season, 2000

SUMMARY: Total Peak Season Recreation Days Per Person 12+

1960	22.09
1970	24.78
1976	26.40
2000	32.01

[1]Occasions are per person 12 years of age and over. ORRRC forecasts of total occasions were converted to occasions per person 12+ through the use of population estimates derived from ORRRC Reports #19 and #26 for 1960 and #23 for the forecast years. The derived population 12+ is: 1960, 130,500,000; 1976, 173,275,000; 2000, 258,006,000.

TABLE D-5 (Continued)

2. Determine "Away" Recreation Days Per Person 12+ in Peak Season
Source: ORRRC Reports #19, p. 369 and #23, p. 24.

A. Given data	1960	1976	2000
Total "Away" Days	14.6	18.1	22.4
Peak Season	7.5		
Vacation Days	6.4	8.0	10.1
Peak Season	3.5		
Trip Days	2.0	2.6	3.3
Peak Season	1.0		
Outing Days	6.2	7.5	9.0
Peak Season	3.0		

Solve:

(1) $7.5/14.6 = X_1/18.1$ and $X_2/22.4$ — X_1=9.2 Peak Season Days Away, 1976; X_2=11.4 Peak Season Days Away, 2000

(2) $3.5/6.4 = X_1/8.0$ and $X_2/10.1$ — X_1=4.4 Peak Season Vacation Days, 1976; X_2=5.5 Peak Season Vacation Days, 2000

(3) $1.0/2.0 = X_1/2.6$ and $X_2/3.3$ — X_1=1.3 Peak Season Trip Days, 1976; X_2=1.6 Peak Season Trip Days, 2000

(4) $3.0/6.2 = X_1/7.5$ and $X_2/4.3$ — X_1=3.5 Peak Season Outing Days, 1976; X_2=4.3 Peak Season Outing Days, 2000

SUMMARY: Peak Season Days Per Person 12+ "Away"

	1960	1970*	1976	2000
Vacations	3.5	4.1	4.4	5.5
Trips	1.0	1.2	1.3	1.6
Outings	3.0	3.3	3.5	4.3
Total:	7.50	8.56	9.20	11.40

3, Determine "Home" Recreation Days Per Person 12+ in Peak Season

	1960	1970	1976	2000
Total Peak Season Days	22.09	24.78	26.40	32.01
Away Peak Season Days	- 7.50	- 8.56	- 9.20	-11.40
"Home" Peak Season Days	14.59	16.22	17.20	20.61

* Pro-rated arithmetically between 1960 and 1976

be a function of the forecast Massachusetts population. Forecast recreation days near home were determined by applying expected recreation days per person to forecasts of Massachusetts population. Allocation of recreation activity to regions in the state was accomplished through the same procedures developed for the base year, 1960.

ORRRC forecast total recreation occasions to the years 1976 and 2000 (Report #26) for the peak season. Forecast occasions were converted to days in the peak season by assuming that the base year ratio of days to occasions would remain constant. The procedure is presented in Table D-5, part 1. The ORRRC study also forecast recreation days "away," on vacations, trips and outings. These were allocated to the peak season by assuming that the base year ratio of peak season days to total days would hold in the future. (See Table D-5, part 2.) Recreation days occurring near home in the peak season were determined by simply subtracting "away" days from total days. (See Table D-5, part 3.)

Recreation days derived for persons "away" and at "home" served as controls on the derivation of recreation days in each of the 20 forecast activities. The ORRRC studies forecast total occasions in the peak season, as mentioned above. These were converted to occasions per person through the use of forecasts of the population aged 12 and over (See Table D-6). Total recreation days per person in the peak season were distributed among activities on the basis of the proportionate distribution of occasions per person for the base year and forecast years.

Peak season days in 1960 were determined for "home" and "away" recreation for each activity by applying the proportion of annual recreation in each activity occurring in the peak season (See Table D-3) to annual "home" and "away" activity distributions. The derived peak season activity distribution was controlled by the estimated number of recreation days at "home" and "away" (14.59 and 7.50). The ratio of "home" recreation days to total days was computed for each activity for 1960 (See Table D-7) and applied to the forecast number of total recreation days. This provided a means by which "home" and "away" activity in the forecast years could be estimated. The results were in turn controlled by the separately determined forecast total number of days at "home" and "away".

The participation ratios presented in Table D-7 were applied to appropriate population data to derive an activity distribution for Massachusetts and its seven regions. The regional results were summed to a state total and adjusted on the basis of their relation to the state.

The ratios dealt with include only persons 12 years of age and over. Total recreation figures were derived by adding the proportion of the population under 12 years of age to the results for those aged 12 and over. These proportions were 25% in 1960 and 1970 and 27% in 2000.

The ORRRC reports dealt with the forecast years 1976 and 2000 while one of this study's output years was 1970. The participation ratios were prorated between 1960 and 1976 assuming an equal annual arithmetic change to derive ratios for 1970.

TABLE D-6: TOTAL RECREATION OCCASIONS AND OCCASIONS PER PERSON IN THE PEAK SEASON, 1960, 1976 AND 2000.

	1960		1976		2000	
Activity	Total Occasions in millions	Occasions Per Person	Total Occasions in millions	Occasions Per Person	Total Occasions in millions	Occasions Per Person
O. D. Concerts	27	.21	46	.27	92	.36
O. D. Sports	172	1.32	252	1.45	416	1.61
Bicycle	228	1.75	297	1.71	452	1.75
Boating	159	1.22	285	1.64	557	2.16
Camping	60	.46	113	.65	235	.91
Driving	872	6.68	1,341	7.74	2,215	8.59
Fishing	260	1.99	350	2.02	521	2.02
Hiking	34	.26	63	.36	125	.48
Horse Riding	55	.42	82	.47	143	.55
Hunting	95	.73	123	.71	174	.67
Nat. Study	98	.75	153	.88	263	1.02
Picnicking	279	2.14	418	2.41	700	2.71
Competitive Sports	474	3.63	825	4.76	1,666	6.46
Sightseeing	287	2.20	456	2.63	825	3.20
Swimming	672	5.15	1,182	6.82	2,307	8.94
Walking	566	4.34	856	4.94	1,567	6.07
Water Skiing	39	.30	84	.48	189	.73
Ice Skating	68	.52	130	.75	266	1.03
Sled Riding	57	.44	88	.51	174	.67
Snow Skiing	8	.06	17	.10	38	.15
Mt. Climbing	5	.04	9	.05	18	.07
Population 12+	130,500,000 (75% of Total)	34.61	173,275,000 (75% of Total)	41.35	258,006,000 (73% of Total)	50.15

SOURCE: ORRRC Report #26, p. 22, Report #23, Report #19.

NOTE: Mountain Climbing is assumed to increase at the same rate as Hiking and Snow Skiing at the same rate as Water Skiing.

TABLE D-7: RECREATION PARTICIPATION RATIOS: RECREATION DAYS PER PERSON 12 YEARS OF AGE AND OVER BY ACTIVITY; "HOME" AND "AWAY" RECREATION, 1960, 1976 AND 2000.

Activity	Home Days / Total Days %	1960 Peak Season Days Per Person			1976 Peak Season Days Per Person			2000 Peak Season Days Per Person		
		Total	Home	Away	Total	Home	Away	Total	Home	Away
O.D. Concerts	64	.14	.09	.05	.17	.11	.06	.23	.14	.09
O.D. Sports	62	.84	.52	.32	.93	.57	.36	1.03	.62	.41
Bicycle	73	.97	.71	.26	1.09	.73	.36	1.12	.79	.33
Boating	43	.81	.35	.46	1.05	.44	.61	1.38	.57	.81
Camping[1]	--	.32	--	.32	.42	--	.42	.58	--	.58
Driving	73	4.16	3.04	1.12	4.94	3.55	1.39	5.48	3.85	1.63
Fishing	34	1.31	.44	.87	1.29	.42	.87	1.29	.42	.87
Hiking	89	.18	.16	.02	.23	.20	.03	.31	.27	.04
Horse Riding	96	.25	.24	.01	.30	.29	.01	.35	.33	.02
Hunting	33	.54	.18	.36	.45	.13	.32	.43	.13	.30
Nat. Study	63	.48	.30	.18	.56	.34	.22	.65	.39	.26
Picnicking	40	1.42	.57	.85	1.54	.61	.93	1.73	.66	1.07
Playing Games	94	2.22	2.09	.13	3.04	2.81	.23	4.12	3.72	.40
Sightseeing	68	1.38	.94	.44	1.68	1.12	.56	2.04	1.34	.70
Swimming	51	3.35	1.70	1.65	4.35	2.18	2.16	5.70	2.80	2.90
Walking	92	2.93	2.70	.23	3.15	2.85	.30	3.87	3.43	.44
Water Skiing	44	.18	.08	.10	.31	.14	.17	.47	.20	.27
Ice Skating	84	.32	.27	.05	.48	.39	.09	.66	.53	.13
Sled Riding	88	.26	.23	.03	.32	.28	.04	.43	.37	.06
Snow Skiing	25	.04	.01	.03	.06	.02	.04	.10	.03	.07
Mt. Climbing	50	.04	.02	.02	.04	.02	.02	.04	.02	.02
Total Days		22.14	14.64	7.50	26.40	17.20	9.2	32.01	20.61	11.40

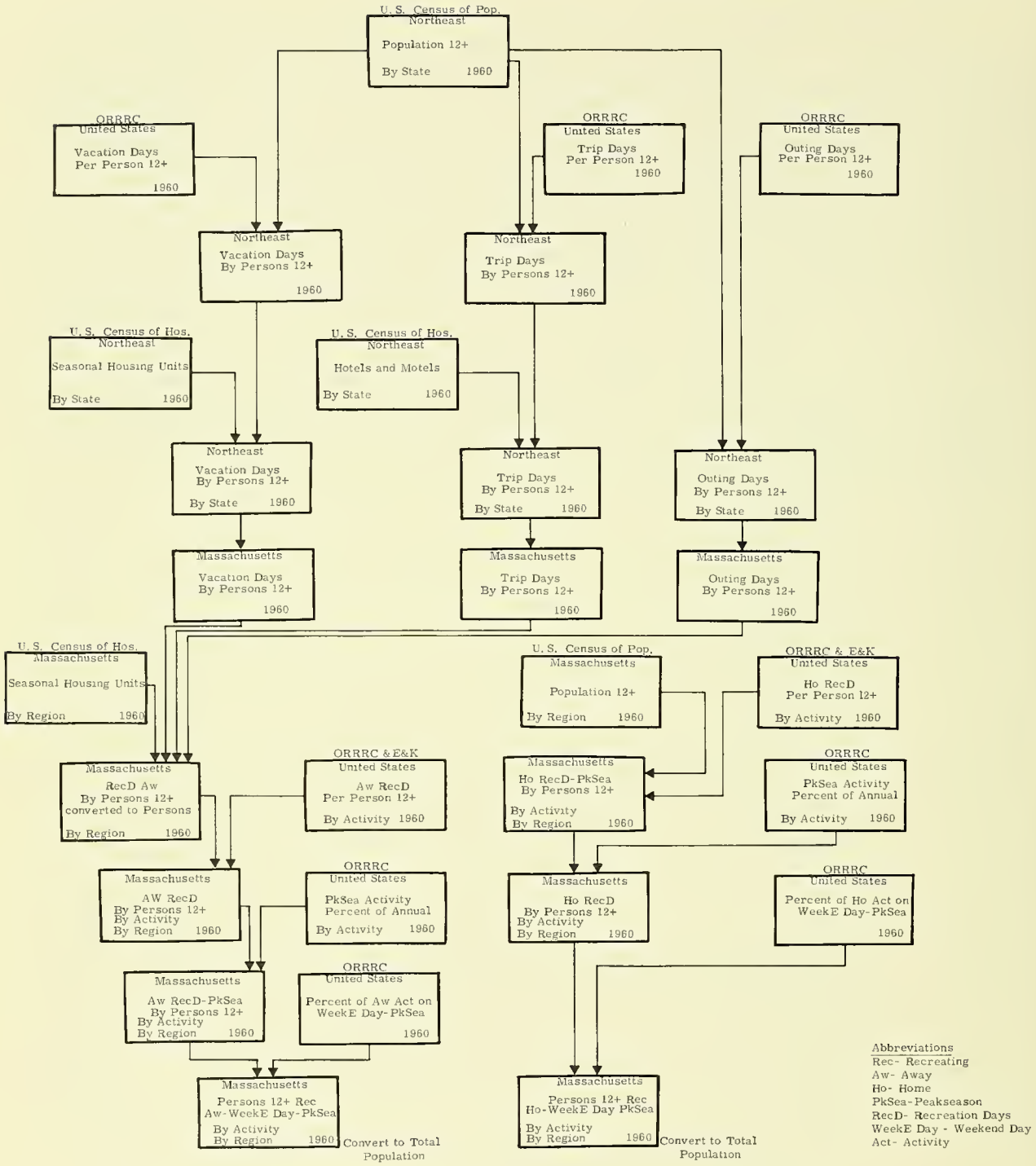
[1] Camping involves an overnight excursion, and is by definition an "away" activity.

RELIABILITY OF RESULTS

It was not possible to determine the accuracy of the recreation demand estimates produced by the method described above because there is a general lack of survey data. However, data dealing with selected recreation activities in Barnstable County make a few comparisons possible. A study of the outdoor recreation resources in Barnstable County[1] found that 61,000 persons in 1960 used the beaches at one time on a peak day. The demand figures derived in this study indicate that 72,600 persons would have participated in swimming at one time in both salt and fresh water areas of Cape Cod and the Islands on a summer weekend day in 1960. The two figures differ by 1,100 persons, however, one would expect a discrepancy due to the difference in area referred to and the exclusion of fresh water swimming from the Barnstable County figure. Given these differences the two figures seem remarkably compatible. Data for camping in Barnstable County are also reasonable. The same study found that 8,200 persons camped in Barnstable County on a typical day while the figure derived in this study for the Cape and the Islands is 10,250 on a peak season weekend day.

Comparisons for other activities are not possible because data from the Barnstable County study and that produced here are not comparable. However, the fact that our estimates do compare favorably with the actual survey data for two important recreation activities in Massachusetts' most popular recreation area lends support to the validity of the results presented in this report.

[1] The Commonwealth of Massachusetts, Department of Natural Resources; The Outdoor Recreational Resources of Barnstable County, Massachusetts, (March, 1963).


U. S. Census of Pop.
Northeast
Population 12+
By State 1960
ORRRC
United States
Vacation Days
Per Person 12+
1960
ORRRC
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Trip Days
Per Person 12+
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United States
Outing Days
Per Person 12+
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Northeast
Vacation Days
By Persons 12+
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U. S. Census of Hos.
Northeast
Seasonal Housing Units
By State 1960
U. S. Census of Hos.
Northeast
Hotels and Motels
By State 1960
Northeast
Vacation Days
By Persons 12+
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Northeast
Trip Days
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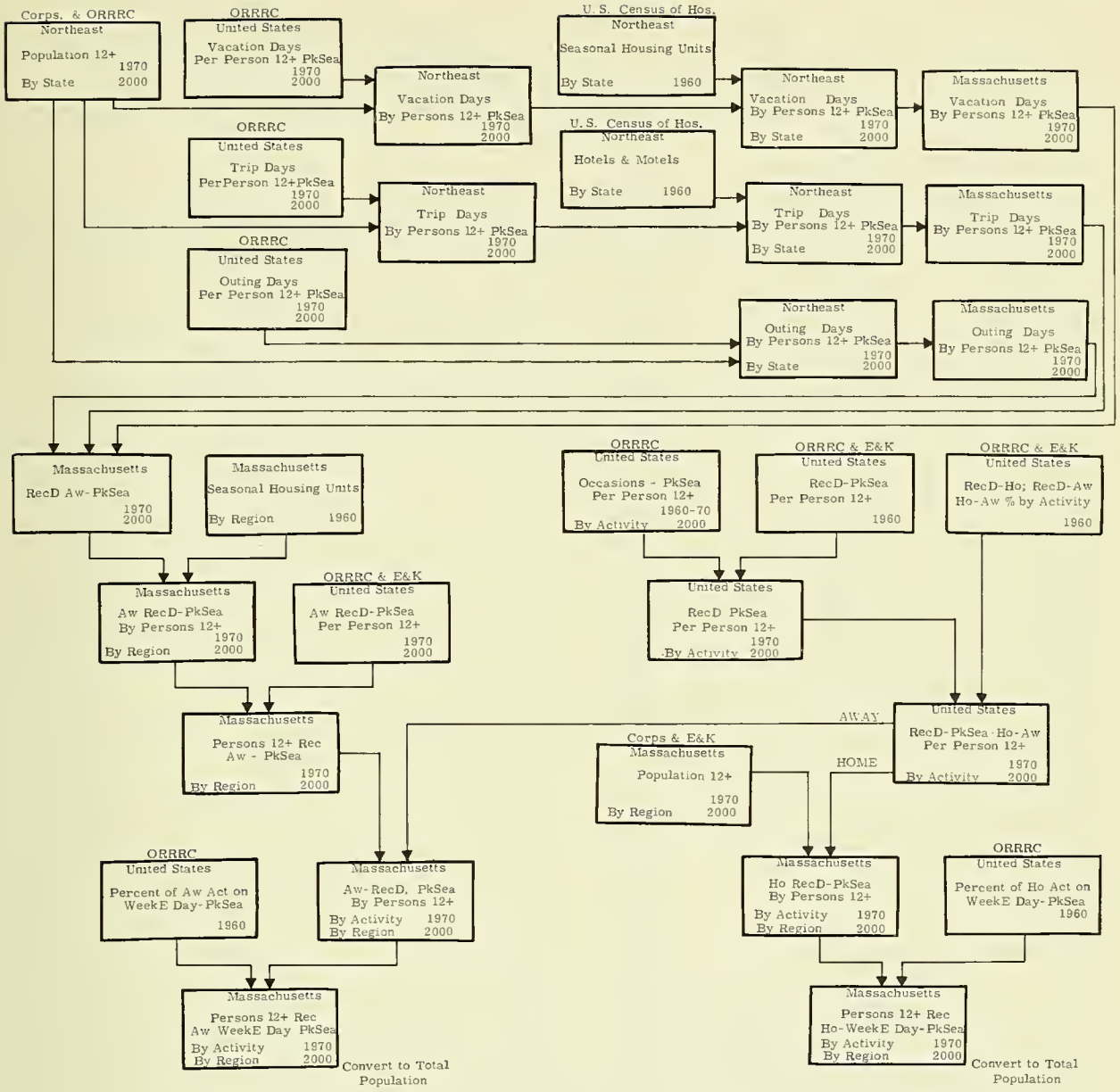
By Region 1960
Convert to Total Population
Abbreviations
Rec- Recreating
Aw- Away
Ho- Home
PkSea-Peakseason
RecD- Recreation Days
WeekE Day - Weekend Day
Act- Activity


Corps. & ORRRC
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Seasonal Housing Units
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Per Person 12+
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Massachusetts
Aw RecD-PkSea
By Persons 12+
1970
By Region 2000
ORRRC & E&K
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Aw RecD-PkSea
Per Person 12+
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By Activity 2000
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By Region 2000
AWAY
HOME
Corps & E&K
Massachusetts
Population 12+
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By Region 2000
United States
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Massachusetts
Aw-RecD. PkSea
By Persons 12+
By Activity 1970
By Region 2000
Massachusetts
Ho RecD-PkSea
By Persons 12+
By Activity 1970
By Region 2000
ORRRC
United States
Percent of Ho Act on
WeekE Day-PkSea
1960
Massachusetts
Persons 12+ Rec
Aw WeekE Day PkSea
By Activity 1970
By Region 2000
Convert to Total
Population
Massachusetts
Persons 12+ Rec
Ho-WeekE Day-PkSea
By Activity 1970
By Region 2000
Convert to Total
Population

MASSACHUSETTS

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION
ON VACATIONS, TRIPS AND OUTINGS: 1960, 1970, 2000

Primary Outdoor Activities	1960	1970	2000
Swimming	178,600	249,700	463,100
Fishing	94,200	104,400	135,000
Picnicking	92,000	110,000	166,000
Boating	49,300	68,400	125,700
Hunting	38,400	40,400	46,500
Attending Outdoor Sports	34,600	41,900	63,600
Bicycling	27,900	33,700	51,200
Camping	26,400	37,300	67,300
Competitive Outdoor Sports	15,100	26,800	62,100
Water Skiing	11,500	18,600	41,900
Ice Skating	4,600	8,400	20,200
Attending Outdoor Concerts	4,600	6,900	14,000
Sledding	4,200	5,500	9,300
Snow Skiing	3,500	5,400	10,900
Horseback Riding	1,700	2,000	3,100
Supplementary Outdoor Activities			
Pleasure Driving	120,500	153,600	252,900
Walking [1]	49,100	66,300	117,800
Sightseeing	47,300	62,600	108,600
TOTAL	803,500	1,041,900	1,759,200

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing

MASSACHUSETTS

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION NEAR THEIR HOME: 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Competitive Outdoor Sports	250,700	377,600	758,400
Swimming	205,300	296,700	570,800
Bicycling	83,400	102,800	161,100
Picnicking	68,600	85,100	134,600
Attending Outdoor Sports	60,200	76,800	126,400
Fishing	53,400	61,500	85,600
Boating	41,600	60,300	116,200
Ice Skating	33,200	51,900	108,100
Horseback Riding	29,100	38,700	67,300
Sledding	28,100	39,900	75,400
Hunting	21,800	23,000	26,500
Attending Outdoor Concerts	11,000	15,400	28,500
Water Skiing	10,600	18,200	40,800
Snow Skiing	1,100	2,400	6,100
Supplementary Outdoor Activities			
Walking [1]	378,900	493,700	837,900
Pleasure Driving	364,200	469,400	784,900
Sightseeing	112,900	153,000	273,200
TOTAL	1,754,100	2,366,400	4,201,800

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing.

REGION 1

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION ON VACATIONS, TRIPS AND OUTINGS: 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Swimming	7,400	10,300	18,900
Fishing	3,900	4,300	5,700
Picnicking	3,800	4,100	7,000
Boating	2,000	2,800	5,300
Hunting	1,600	1,700	2,000
Attending Outdoor Sports	1,400	1,700	2,700
Bicycling	1,100	1,400	2,100
Camping	1,100	1,500	2,800
Competitive Outdoor Sports	600	1,100	2,600
Water Skiing	500	800	1,800
Ice Skating	200	300	800
Attending Outdoor Concerts	200	300	600
Sledding	200	200	400
Snow Skiing	900	1,400	2,900
Horseback Riding	100	100	100
Supplementary Outdoor Activities			
Pleasure Driving	5,000	6,400	10,600
Walking [1]	2,000	2,800	5,000
Sightseeing	1,900	2,600	4,600
TOTAL	33,900	43,800	75,900

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing

REGION 1

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION NEAR THEIR HOME: 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Competitive Outdoor Sports	7,400	10,200	18,800
Swimming	6,000	8,000	14,100
Bicycling	200	1,200	4,000
Picnicking	2,000	2,300	3,300
Attending Outdoor Sports	200	900	3,100
Fishing	1,600	1,700	2,100
Boating	1,300	1,700	2,900
Ice Skating	900	1,400	2,700
Horseback Riding	900	1,100	1,700
Sledding	800	1,100	1,900
Hunting	600	600	700
Attending Outdoor Concerts	300	400	700
Water Skiing	300	400	1,000
Snow Skiing	100	200	500
Supplementary Outdoor Activities			
Walking [1]	11,300	13,600	20,800
Pleasure Driving	10,700	12,900	19,400
Sightseeing	3,400	4,200	6,800
TOTAL	48,000	61,900	104,500

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing.

REGION 2

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION ON VACATIONS, TRIPS AND OUTINGS; 1960, 1970, 2000

Primary Outdoor Activities	1960	1970	2000
Swimming	10,100	14,100	25,900
Fishing	5,300	5,900	7,800
Picnicking	5,200	6,300	9,600
Boating	2,800	3,900	7,200
Hunting	2,200	2,300	2,700
Attending Outdoor Sports	2,000	2,400	3,700
Bicycling	1,600	1,900	3,000
Camping	1,500	2,800	3,900
Competitive Outdoor Sports	900	1,500	3,600
Water Skiing	600	1,100	2,400
Ice Skating	300	500	1,200
Attending Outdoor Concerts	300	400	800
Sledding	200	300	500
Snow Skiing	600	1,000	2,000
Horseback Riding	100	100	200
Supplementary Outdoor Activities			
Pleasure Driving	6,800	8,800	14,600
Walking [1]	2,800	3,700	6,800
Sightseeing	2,700	3,600	6,300
TOTAL	46,000	60,600	102,200

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing

REGION 2

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION NEAR THEIR HOME; 1960, 1970, 2000

Primary Outdoor Activities	1960	1970	2000
Competitive Outdoor Sports	28,400	42,000	82,700
Swimming	23,200	33,000	62,200
Bicycling	9,700	11,600	17,600
Picnicking	7,800	9,500	14,700
Attending Outdoor Sports	7,000	8,700	13,800
Fishing	6,000	6,700	9,300
Boating	4,700	6,700	12,700
Ice Skating	3,900	5,900	11,800
Horseback Riding	3,300	4,300	7,300
Sledding	3,200	4,500	8,200
Hunting	2,400	2,600	2,900
Attending Outdoor Concerts	1,200	1,700	3,100
Water Skiing	1,200	2,000	4,400
Snow Skiing	100	300	800
Supplementary Outdoor Activities			
Walking [1]	42,800	55,100	91,300
Pleasure Driving	42,300	52,300	85,600
Sightseeing	12,800	17,000	29,800
TOTAL	200,000	263,900	458,200

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing.

REGION 3

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION ON VACATIONS, TRIPS AND OUTINGS; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Swimming	17,000	23,700	43,800
Fishing	9,000	10,000	13,100
Picnicking	8,800	10,600	16,100
Boating	4,700	6,600	12,200
Hunting	3,700	3,900	4,500
Attending Outdoor Sports	3,300	4,000	6,200
Bicycling	2,700	3,200	5,000
Camping	2,500	3,500	6,400
Competitive Outdoor Sports	1,400	2,600	6,000
Water Skiing	1,100	1,800	4,100
Ice Skating	400	800	2,000
Attending Out door Concerts	400	700	1,400
Sledding	400	500	900
Snow Skiing	400	600	1,300
Horseback Riding	200	200	300
Supplementary Out door Activities			
Pleasure Driving	11,500	14,800	24,600
Walking [1]	4,700	6,300	11,400
Sightseeing	4,500	6,000	10,600
TOTAL	76,700	99,800	169,900

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing

REGION 3

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION NEAR THEIR HOME; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Competitive Outdoor Sports	30,500	45,700	91,000
Swimming	25,000	35,800	68,500
Bicycling	10,400	12,600	19,300
Picnicking	8,300	10,300	16,100
Attending Outdoor Sports	7,500	9,400	15,200
Fishing	6,500	7,400	10,200
Boating	5,100	7,300	13,900
Ice Skating	4,100	6,300	13,600
Horseback Riding	3,500	4,700	8,100
Sledding	3,400	4,800	9,100
Hunting	2,600	2,800	3,200
Attending Outdoor Concerts	1,400	1,900	3,400
Water Skiing	1,300	2,200	4,900
Snow Skiing	100	300	800
Supplementary Outdoor Activities			
Walking [1]	46,000	59,600	100,500
Pleasure Driving	44,300	56,800	94,250
Sightseeing	13,700	18,500	32,800
TOTAL	213,700	286,400	504,300

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing.

REGION 4

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION ON VACATIONS, TRIPS AND OUTINGS; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Swimming	13,000	18,100	33,400
Fishing	6,800	7,600	10,000
Picnicking	6,700	8,100	12,300
Boating	3,600	5,000	9,300
Hunting	2,800	3,000	3,500
Attending Outdoor Sports	2,500	3,100	4,700
Bicycling	2,000	2,500	3,800
Camping	1,900	2,700	5,000
Competitive Outdoor Sports	1,100	2,000	4,600
Water Skiing	800	1,400	3,100
Ice Skating	300	600	1,500
Attending Outdoor Concerts	300	500	1,000
Sledding	300	400	700
Snow Skiing	600	1,000	2,000
Horseback Riding	100	100	200
Supplementary Outdoor Activities			
Pleasure Driving	8,700	11,200	18,700
Walking [1]	3,500	4,900	8,800
Sightseeing	3,400	4,600	8,100
TOTAL	58,400	76,800	130,700

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing

REGION 4

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION NEAR THEIR HOME; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Competitive Outdoor Sports	20,000	32,700	70,600
Swimming	16,500	25,600	53,200
Bicycling	6,900	8,900	15,000
Picnicking	5,400	7,200	12,500
Attending Outdoor Sports	4,900	6,600	11,800
Fishing	4,300	5,200	8,000
Boating	3,300	5,200	10,800
Ice Skating	2,700	4,500	10,100
Horseback Riding	2,300	3,300	6,300
Sledding	2,200	3,400	7,000
Hunting	1,700	1,900	2,500
Attending Outdoor Concerts	900	1,400	2,700
Water Skiing	800	1,600	3,800
Snow Skiing	100	200	600
Supplementary Outdoor Activities			
Walking [1]	30,500	42,200	78,000
Pleasure Driving	29,200	40,100	73,100
Sightseeing	9,000	13,100	25,400
TOTAL	140,700	203,100	391,400

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing.

REGION 5

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION ON VACATIONS, TRIPS AND OUTINGS; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Swimming	36,300	50,500	93,300
Fishing	19,100	21,300	28,000
Picnicking	18,700	22,600	34,400
Boating	10,000	14,000	26,100
Hunting	7,800	8,300	9,700
Attending Outdoor Sports	7,000	8,600	13,200
Bicycling	5,700	6,900	10,600
Camping	5,400	7,500	14,000
Competitive Outdoor Sports	3,100	5,500	12,900
Water Skiing	2,300	3,400	8,700
Ice Skating	900	1,700	4,200
Attending Outdoor Concerts	900	1,400	2,900
Sledding	800	1,100	1,900
Snow Skiing	800	1,300	2,700
Horseback Riding	300	400	600
Supplementary Outdoor Activities			
Pleasure Driving	24,500	31,500	52,400
Walking [1]	10,000	13,600	24,500
Sightseeing	9,600	12,800	22,500
TOTAL	163,200	212,400	362,600

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing

REGION 5

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION
NEAR THEIR HOME; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Competitive Outdoor Sports	138,000	207,200	414,600
Swimming	113,000	162,800	312,100
Bicycling	47,100	57,400	88,000
Picnicking	37,800	46,700	73,600
Attending Outdoor Sports	34,000	42,800	69,100
Fishing	29,400	33,700	46,800
Boating	22,800	33,000	63,500
Ice Skating	17,900	28,200	59,100
Horseback Riding	16,000	21,200	36,800
Sledding	15,500	21,900	41,200
Hunting	12,000	12,600	14,500
Attending Outdoor Concerts	6,000	8,400	15,600
Water Skiing	5,900	10,000	22,300
Snow Skiing	600	1,300	3,400
Supplementary Outdoor Activities			
Walking [1]	208,200	270,700	458,100
Pleasure Driving	200,500	257,700	429,100
Sightseeing	62,200	84,000	149,300
TOTAL	966,900	1,299,600	2,297,100

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing.

REGION 6

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION ON VACATIONS, TRIPS AND OUTINGS; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Swimming	25,500	35,500	65,500
Fishing	13,400	15,000	19,700
Picnicking	13,100	15,900	24,200
Boating	7,000	9,800	18,300
Hunting	5,500	5,800	6,700
Attending Outdoor Sports	4,900	6,000	9,300
Bicycling	4,000	4,800	7,500
Camping	3,800	5,300	9,800
Competitive Outdoor Sports	2,100	3,900	9,000
Water Skiing	1,600	2,800	6,100
Ice Skating	700	1,200	2,900
Attending Outdoor Concerts	600	1,000	2,000
Sledding	600	800	1,400
Snow Skiing	---	---	---
Horseback Riding	200	300	500
Supplementary Outdoor Activities			
Pleasure Driving	17,200	22,100	36,800
Walking	7,000	9,500	17,200
Sightseeing	6,700	9,000	15,800
TOTAL	113,900	148,700	252,700

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing

REGION 6

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION NEAR THEIR HOME; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Competitive Outdoor Sports	22,500	32,600	63,000
Swimming	18,400	25,700	47,400
Bicycling	7,700	9,100	13,400
Picnicking	6,200	7,500	11,200
Attending Outdoor Sports	5,500	6,800	10,500
Fishing	4,800	5,400	7,100
Boating	3,800	5,200	9,600
Ice Skating	3,100	4,600	9,000
Horseback Riding	2,600	3,400	5,600
Sledding	2,500	3,500	6,300
Hunting	1,900	2,000	2,200
Attending Outdoor Concerts	1,000	1,300	2,400
Water Skiing	1,000	1,600	3,400
Snow Skiing	---	---	---
Supplementary Outdoor Activities			
Walking [1]	34,500	43,200	69,600
Pleasure Driving	32,700	40,800	65,200
Sightseeing	10,200	13,300	22,700
TOTAL	158,400	206,000	348,600

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing.

REGION 7

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION ON VACATIONS, TRIPS AND OUTINGS; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Swimming	69,400	97,600	182,400
Fishing	36,600	40,100	50,800
Picnicking	35,700	42,400	62,400
Boating	19,200	26,200	47,300
Hunting	14,900	15,600	17,500
Attending Outdoor Sports	13,400	16,100	23,900
Bicycling	10,800	12,900	19,200
Camping	10,200	14,000	25,400
Competitive Outdoor Sports	5,800	10,200	23,300
Water Skiing	4,400	7,300	15,700
Ice Skating	1,800	3,200	7,600
Attending Outdoor Concerts	1,800	2,600	5,200
Sledding	1,600	2,100	3,500
Snow Skiing	---	---	---
Horseback Riding	600	800	1,200
Supplementary Outdoor Activities			
Pleasure Driving	46,800	58,900	95,100
Walking [1]	19,100	25,500	44,400
Sightseeing	18,400	24,000	40,800
TOTAL	310,500	399,500	665,700

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing

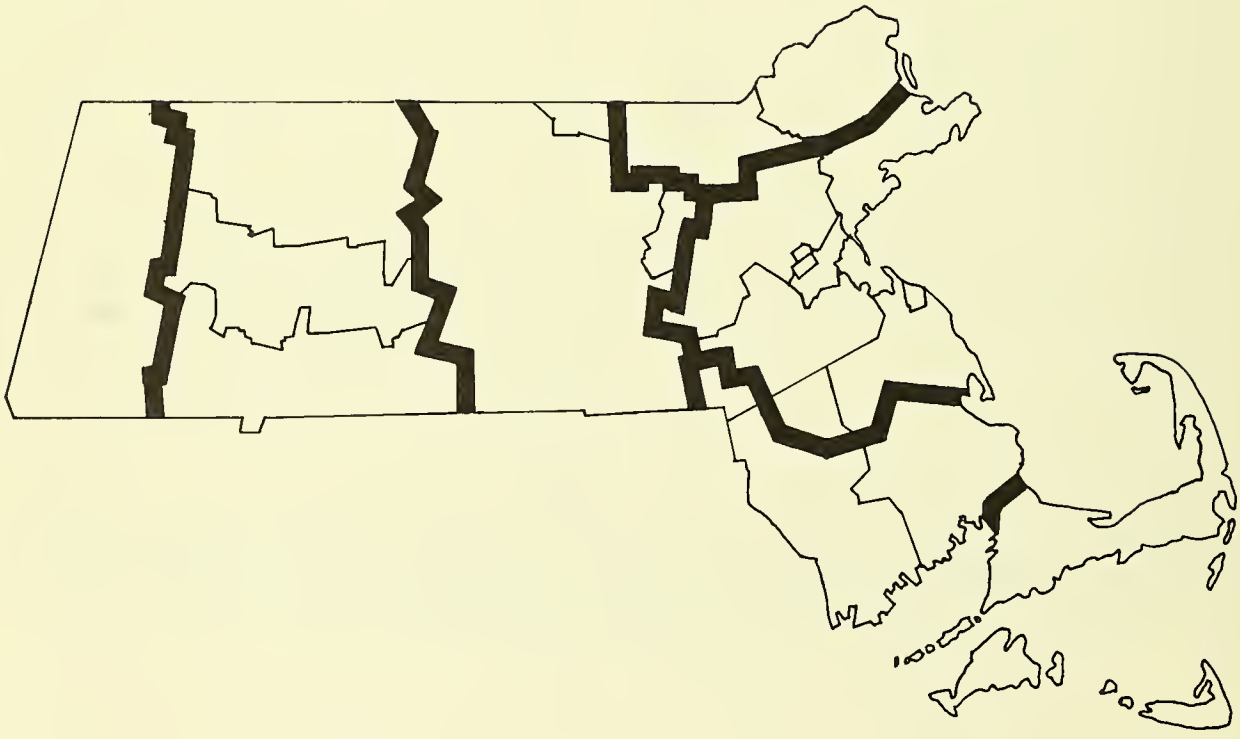
REGION 7

NUMBER OF PERSONS* ENGAGING IN OUTDOOR RECREATION NEAR THEIR HOME; 1960, 1970, 2000.

Primary Outdoor Activities	1960	1970	2000
Competitive Outdoor Sports	3,800	7,300	17,700
Swimming	3,200	5,800	13,400
Bicycling	1,300	2,100	3,800
Picnicking	1,100	1,600	3,100
Attending Outdoor Sports	900	1,500	3,000
Fishing	800	1,100	2,000
Boating	600	1,200	2,700
Ice Skating	500	1,000	2,500
Horseback Riding	400	700	1,600
Sledding	400	800	1,800
Hunting	300	400	600
Attending Outdoor Concerts	200	300	700
Water Skiing	200	400	1,000
Snow Skiing	---	---	---
Supplementary Outdoor Activities			
Walking [1]	5,800	9,200	19,700
Pleasure Driving	5,600	8,800	18,400
Sightseeing	1,700	2,800	6,400
TOTAL	26,800	45,000	98,400

* Number of persons at one time on an average weekend day in the peak season for each activity. [1] includes hiking and climbing.

Supply



MASSACHUSETTS

RECREATION SUPPLY: CAPACITY* OF OUTDOOR RECREATION FACILITIES, 1965

Primary Outdoor Activities	Municipal	State & Federal	Private
Swimming	112,900	130,200	---
Fishing **	41,404	21,805	164,000
Picnicking **	8,530	26,640	---
Boating **	4,900	3,878	31,400
Hunting	---	18,240	---
Attending Outdoor Sports	---	3,550	---
Bicycling	---	11,275	---
Camping	---	7,980	17,700
Competitive Outdoor Sports	---	15,800	51,500
Water Skiing **	1,200	---	7,560
Ice Skating	---	29,085	---
Attending Outdoor Concerts	---	4,850	---
Sledding	---	340	---
Snow Skiing	---	3,100	15,400
Horseback Riding	---	8,815	---
Supplementary Outdoor Activities			
Walking [1]	---	71,351	---
Sightseeing **	---	243	---
TOTAL	168,934	357,152	287,560

1. Walking includes hiking and climbing.
* Capacity is the number of persons who can be accommodated at one time.
** See explanatory notes.

REGION 1

RECREATION SUPPLY: CAPACITY* OF OUTDOOR RECREATION FACILITIES, 1965

Primary Outdoor Activities	Municipal	State & Federal	Private
Swimming	---	1,570	---
Fishing **	740	816	15,000
Picnicking **	1,000	2,740	---
Boating **	300	100	3,200
Hunting	---	7,126	---
Attending Outdoor Sports	---	1,500	---
Bicycling	---	---	---
Camping	---	1,260	1,470
Competitive Outdoor Sports	---	100	3,000
Water Skiing **	120	---	800
Ice Skating	---	---	---
Attending Outdoor Concerts	---	---	---
Sledding	---	100	---
Snow Skiing	---	800	7,200
Horseback Riding	---	1,930	---
Supplementary Outdoor Activities			
Walking [1]	---	6,472	---
Sightseeing **	---	13	---
TOTAL	2,160	24,527	30,670

1. Walking includes hiking and climbing.
* Capacity is the number of persons who can be accommodated at one time.
** See explanatory notes.

REGION 2

RECREATION SUPPLY: CAPACITY* OF OUTDOOR RECREATION FACILITIES, 1965

Primary Outdoor Activities	Municipal	State & Federal	Private
Swimming	---	2,550	---
Fishing **	3,496	1,915	15,000
Picnicking **	2,000	4,760	---
Boating **	400	1,790	3,800
Hunting	---	5,613	---
Attending Outdoor Sports	---	---	---
Bicycling	---	1,050	---
Camping	---	1,510	1,060
Competitive Outdoor Sports	---	2,100	3,400
Water Skiing **	40	---	720
Ice Skating	---	1,460	---
Attending Outdoor Concerts	---	---	---
Sledding	---	240	---
Snow Skiing	---	500	4,100
Horseback Riding	---	270	---
Supplementary Outdoor Activities			
Walking [1]	---	7,777	---
Sightseeing **	---	38	---
TOTAL	5,936	31,573	28,080

1. Walking includes hiking and climbing.
* Capacity is the number of persons who can be accommodated at one time.
** See explanatory notes.

REGION 3

RECREATION SUPPLY: CAPACITY* OF OUTDOOR RECREATION FACILITIES, 1965

Primary Outdoor Activities	Municipal	State & Federal	Private
Swimming	---	6,670	---
Fishing **	4,588	7,360	36,000
Picnicking **	1,710	5,900	---
Boating **	700	358	7,800
Hunting	---	775	---
Attending Outdoor Sports	---	900	---
Bicycling	---	---	---
Camping	---	1,020	4,280
Competitive Outdoor Sports	---	1,350	8,000
Water Skiing **	160	---	2,040
Ice Skating	---	2,700	---
Attending Outdoor Concerts	---	---	---
Sledding	---	---	---
Snow Skiing	---	400	400
Horseback Riding	---	680	---
Supplementary Outdoor Activities			
Walking [1]	---	4,391	---
Sightseeing **	---	6	---
TOTAL	7,158	32,510	58,520

1. Walking includes hiking and climbing.

* Capacity is the number of persons who can be accommodated at one time.

** See explanatory notes.

REGION 4

RECREATION SUPPLY: CAPACITY* OF OUTDOOR RECREATION FACILITIES, 1965

Primary Outdoor Activities	Municipal	State & Federal	Private
Swimming	---	22,650	---
Fishing **	456	1,156	10,000
Picnicking **	650	1,900	---
Boating **	100	300	1,700
Hunting	---	1,420	---
Attending Outdoor Sports	---	150	---
Bicycling	---	1,500	---
Camping	---	1,480	640
Competitive Outdoor Sports	---	100	2,900
Water Skiing **	---	---	280
Ice Skating	---	4,500	---
Attending Outdoor Concerts	---	---	---
Sledding	---	---	---
Snow Skiing	---	---	3,700
Horseback Riding	---	130	---
Supplementary Outdoor Activities			
Walking [1]	---	912	---
Sightseeing **	---	11	---
TOTAL	1,206	36,209	19,220

1. Walking includes hiking and climbing.
* Capacity is the number of persons who can be accommodated at one time.
** See explanatory notes.

REGION 5

RECREATION SUPPLY: CAPACITY* OF OUTDOOR RECREATION FACILITIES, 1965

Primary Outdoor Activities	Municipal	State & Federal	Private
Swimming	110,100	10,100	---
Fishing **	9,612	8,052	31,000
Picnicking **	720	5,500	---
Boating **	800	950	7,700
Hunting	---	490	---
Attending Outdoor Sports	---	1,000	---
Bicycling	---	2,115	---
Camping	---	300	820
Competitive Outdoor Sports	---	12,100	26,000
Water Skiing**	280	---	1,920
Ice Skating	---	14,800	---
Attending Outdoor Concerts	---	4,500	---
Sledding	---	---	---
Snow Skiing	---	1,400	---
Horseback Riding	---	4,800	---
Supplementary Outdoor Activities			
Walking [1]	---	32,505	---
Sightseeing **	---	131	---
TOTAL	121,512	98,743	67,440

1. Walking includes hiking and climbing.
* Capacity is the number of persons who can be accommodated at one time.
** See explanatory notes.

REGION 6

RECREATION SUPPLY: CAPACITY* OF OUTDOOR RECREATION FACILITIES, 1965

	Municipal	State & Federal	Private
Primary Outdoor Activities			
Swimming	---	25,930	---
Fishing **	1,480	1,130	42,000
Picnicking **	1,940	3,400	---
Boating **	300	280	4,000
Hunting	---	808	---
Attending Outdoor Sports	---	---	---
Bicycling	---	4,500	---
Camping	---	1,540	2,960
Competitive Outdoor Sports	---	---	4,700
Water Skiing **	---	---	960
Ice Skating	---	---	---
Attending Outdoor Concerts	---	---	---
Sledding	---	---	---
Snow Skiing	---	---	---
Horseback Riding	---	805	---
Supplementary Outdoor Activities			
Walking [1]	---	5,284	---
Sightseeing **	---	16	---
TOTAL	3,720	43,693	54,620

1. Walking includes hiking and climbing.
* Capacity is the number of persons who can be accommodated at one time.
** See explanatory notes.

REGION 7

RECREATION SUPPLY: CAPACITY * OF OUTDOOR RECREATION FACILITIES, 1965

Primary Outdoor Activities	Municipal	State & Federal	Private
Swimming	2,800	60,730	---
Fishing **	21,032	1,376	15,000
Picnicking **	510	2,440	---
Boating **	2,300	100	3,200
Hunting	---	2,008	---
Attending Outdoor Sports	---	---	---
Bicycling	---	2,110	---
Camping	---	870	6,470
Competitive Outdoor Sports	---	50	3,500
Water Skiing **	600	---	840
Ice Skating	---	5,625	---
Attending Outdoor Concerts	---	350	---
Sledding	---	---	---
Snow Skiing	---	---	---
Horseback Riding	---	200	---
Supplementary Outdoor Activities			
Walking [1]	---	14,010	---
Sightseeing **	---	28	---
TOTAL	27,242	89,897	29,010

1. Walking includes hoking and climbing.
* Capacity is the number of persons who can be accommodated at one time.
** See explanatory notes.

Recreation Capacities: Explanatory Notes

Municipal = Municipal capacity except where noted.

State and Federal = Capacity on State and Federal Reservations.

Private = Capacity on private lands; where not listed capacities were not available.

Fishing	Municipal	= The capacity on inland ponded waters currently open to the public.
	Private	= The ultimate capacity of all Great Ponds.
Picnicking	Municipal	= The capacity on roadside tables of the Department of Public Works.
Boating	Municipal	= The capacity on inland ponded waters over 50 acres in size currently open to the public.
	Private	= The ultimate capacity of Great Ponds over 50 acres in size.
Sightseeing	State & Federal	= The number of historic and cultural sites of regional significance.
Water Skiing	Municipal	= The capacity on inland ponded waters larger then 100 acres currently open to the public.
	Private	= The ultimate capacity of all Great Ponds larger then 100 acres.

Inventory

Public and Quasi-Public Recreation Lands

Agency and Administrative Unit

Massachusetts Department of Natural Resources
- I. Division of Forest and Parks
  - A. State Parks
  - B. State Forests
  - C. State Forest Nurseries
  - D. State Forest Fire Tower Stations
- II. Division of Marine Fisheries
- III. Division of Fisheries and Game
  - A. State Fish Hatcheries
  - B. State Game Farms
  - C. Wildlife Sanctuaries
  - D. Wildlife Management Areas
  - E. Other Fish and Game Holdings

Special State Reservations

Mossachusetts Department of Public Works
- I. Division of Waterways
  - A. Ocean Beoches
  - B. Great Ponds

Metropolitan District Cammission
- I. Major Forest and River Reservations
- II. Other M. D. C. Park Reservations
- III. Miles of Water Frontage
- IV. M. D. C. Waterlands Outside M. D. C. District

Other Municipal
- I. Town Forests

Trustees of Reservations

Massachusetts Audubon Society

University of Massachusetts

U. S. Department of Agriculture - U. S. Forest Service

U. S. Department of Defense
- I. Corps of Engineers

U. S. Department of The Interior
- I. Wildlife Sonctuaries
- II. Fish Hatcheries and Research Station
- III. National Park Service
- IV. Other Holdings

Federal Surplus Lands Declared up for Disposal

I. Division of Forests and Parks

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
	A. STATE PARKS			
I	Balance Rock State Park	Lanesborough	140	143
I	Clarksburg State Park	Clarksburg	364	346
I	Great Barrington State Park	Great Barrington	-	284
I	Lindon Bates Memorial Park	Hancock	424	424
I	Taconic Trail State Park	Williamstown	400	558
I	Wahconah Falls State Park	Windsor Dalton Hinsdale	47	53
II	Charles M. Gardner State Park	Huntington	-	29
II	Chicopee Memorial State Park	Chicopee	-	534
II	John C. Robinson State Park	Agawam	1,088	853
II	Joseph Allen Skinner State Park	South Hadley	375	375
II	North Sugarloaf State Park Area	Deerfield	-	447
III	Hopkinton State Park	Hopkinton Ashland	746	478
III	Lake Quinsigamond State Park	Worcester	25	35
III	Wells State Park	Sturbridge	-	691
III	Whitehall State Park	Hopkinton	849	880
V	Ames Nowell State Park	Abington	-	612
V	Ashland State Park	Ashland	392	455
V	Bradley W. Palmer State Park	Topsfield	721	721
V	Cochituate State Park	Framingham Wayland	1,031	1,082
V	Cushing Memorial State Park	Scituate	8	8
V	Myles Standish State Park	S. Duxbury	22	30
V	Plum Island State Park	Ipswich	67	67
V	Waldon Pond State Park	Concord	92	95
VI	Dighton Rock State Park	Berkley	85	91
VI	Lloyd Memorial State Park	Dartmouth	220	220
VI	Taunton State Park (Massasoit)	Taunton	-	944
VI	Watson State Park	Tauntan	-	12
VII	Martha's Vineyard Beach State Park	Oak Bluffs	56	99
VII	Pilgrim Springs State Park	Truro	1,000	CCNS
VII	Roland C. Nickerson State Park (Formerly a State Forest)	Brewster	-	1,778
		Total:	8,152	12,344
		Change:		+ 4,192
	B. STATE FORESTS			
I	Bash Bish State Forest	Mt. Washington	417	1,264
I	Beartown State Forest	Lee Monterey Great Barrington	8,110	8,207
I	Beckett State Forest	Becket	633	656
I	Campbell's Falls State Forest	New Marlboraugh	3	3
I	Clarksburg State Forest	Clarksburg North Adams	2,802	2,829

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
	B. STATE FORESTS (Cont'd)			
I	Cookson State Forest	New Marlborough	-	2,387
I	East Mountain State Forest	Gt. Barrington	1,552	1,873
I	Florida-North Adams State Forest	Florida-North Adams	-	510
I	Mohawk Trail State Forest	Charlemont Hawley Savoy	6,246	6,452
I	Monroe State Forest	Florida Monroe Rowe	4,029	4,056
I	October Mountain State Forest	Becket Lee Lenox Washington	13,723	14,305
I	Otis State Forest	Becket Otis Sandisfield Tyringham	3,475	3,468
I	Peru State Forest	Peru Middlefield Worthington	2,053	2,257
I	Pittsfield State Forest	Hancock Lanesborough Pittsfield	5,421	7,914
I	Sandisfield State Forest	New Marlborough Sandisfield	3,999	4,059
I	Savoy State Forest	Adams Florida North Adams Savoy	10,956	11,304
I	Swann State Forest	Monterey	987	987
I	Windsor State Forest	Savoy Windsor	1,545	1,558
II	Brimfield State Forest	Brimfield	3,104	3,129
II	Buckland State Forest	Buckland	85	85
II	Chester-Blandford State Forest	Blandford Chester	2,531	2,537
II	Colrain State Forest	Colrain Heath	1,240	1,543
II	Conway State Forest	Conway Williamsburg	1,648	1,793
II	D.A.R. State Forest	Ashfield Goshen	1,229	1,280
II	Erving State Forest	Northfield Orange Warwick Wendell	5,138	5,574
II	Hawley State Forest	Hawley Plainfield	3,835	7,497
II	Huntington State Forest	Huntington Montgomery	674	686
II	Leverett State Forest	Leverett	91	91
II	Leyden State Forest	Leyden	60	60

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
	B. STATE FOREST (Cont'd)			
II	Ludlow State Forest	Ludlow	51	51
II	Middlefield Park	Middlefield	404	603
II	Montague State Forest	Montague	43	25
II	Mount Grace State Forest	Warwick	1,447	1,390
II	New Salem State Forest	New Salem	70	70
II	Northfield State Forest	Northfield	401	401
II	Orange State Forest	Orange	-	50
II	Pelham State Forest	Pelham	24	-
II	Shelburne State Forest	Shelburne	49	49
II	Shutesbury State Forest	Shutesbury	791	792
II	Tolland-Granville State Forest	Wendell Granville	2,247	2,247
II	Tolland, State Forest	Tolland Otis Blandford Tolland	2,919	2,959
II	Warwick State Forest	Warwick	4,567	6,520
II	Wendell State Forest	Montague Wendell	6,610	7,398
II	Worthington State Forest	Worthington	175	175
III	Ashburnham State Forest	Ashburnham Gardener Westminster	1,574	1,574
III	Barre State Forest	Barre Rutland	158	611
III	Douglas State Forest	Douglas	3,234	3,232
III	Fitchburg State Forest	Fitchburg	37	37
III	Holden State Forest	Holden	55	-
III	Hopkinton State Forest	Hopkinton	100	100
III	Hubbardston State Forest	Hubbardston Phillipston Templeton	1,129	1,397
III	Lancaster State Forest	Lancaster	90	90
III	Leominster State Forest	Leominster Princeton	3,518	3,811
III	Marlborough State Forest	Marlborough	76	76
III	Mass. Federation of Women's Clubs State Forest	Petersham	1,001	1,001
III	North Brookfield State Forest	North Brookfield	40	40
III	Oakham State Forest	Oakham	601	1,069
III	Otter River State Forest	Winchendon	832	894
III	Oxford State Forest	Oxford	29	29
III	Paxton State Forest	Paxton	45	-
III	Petersham State Forest	Athol Petersham	510	570
III	Royalston State Forest	Orange Royalston	871	871
III	Rutland State Forest	Rutland	65	1,465
III	Spencer State Forest	Spencer	1,189	1,088
III	Squannacook River State Forest	Townsend	-	308
III	Sutton State Forest	Sutton	596	596

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
	B. STATE FORESTS (Cont'd)			
III	Templeton State Forest	Hubbardston Templeton	665	704
III	Townsend State Forest	Townsend	2,714	2,916
III	Upton State Forest	Hopkinton Northbridge Upton	2,646	2,639
III	Willard Brook State Forest	Ashby	1,737	2,247
III	West Brookfield State Forest	West Brookfield	129	129
III	Westminster State Forest	Westminster	518	432
III	Winchendon State Forest	Winchendon	178	177
IV	Andover State Forest	Andover Tewksbury	43	43
IV	Billerica State Forest	Billerica	376	375
IV	Boxford State Forest	Boxford North Andover Middleton	656	854
IV	Georgetown-Rowley State Forest	Boxford Georgetown Ipswich Rowley	1,060	1,061
IV	Horold Parker State Forest	Andover North Andover	2,987	3,002
IV	Lowell-Dracut State Forest	Dracut Lowell	967	967
IV	Rowley State Forest	Rowley	13	13
IV	North Andover State Forest	North Andover	-	37
IV	Shirley State Forest	Shirley	91	91
V	Bridgewater State Forest	Bridgewater	61	61
V	Bristol-Blake State Reservation	Norfolk	-	200
V	Carlisle State Forest	Carlisle	58	58
V	Foxborough State Forest	Foxborough	800	881
V	Lynnfield State Forest	Lynnfield	7	7
V	Medfield State Forest	Medfield	45	N.R.
V	Sudbury State Forest	Hudson Marlborough Stow Sudbury	234	234
V	West Bridgewater State Forest	West Bridgewater	252	N.R.
V	Willowdale State Forest	Ipwich Topsfield	2,061	2,072
VI	Attleboro State Forest	Attleboro	26	26
VI	Berkley State Forest	Berkley	6	6
VI	Carver State Forest	Carver	10	10
VI	Franklin State Forest	Franklin Wrentham	843	845
VI	Freetown State Forest	Freetown	9	9
VI	Freetown-Fall River State Forest	Fall River Freetown	5,378	5,441
VI	Kingston State Forest	Kingston	130	115
VI	Myles Standish Stote Forest	Carver Plymouth	11,578	11,812

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
	B. STATE FORESTS (Cont'd)			
VI	Raynham Stote Forest	Raynham	16	16
VI	Rehoboth Stote Forest	Rehoboth	137	152
VI	Taunton State Forest	Taunton	29	0
VI	Wrentham State Forest	Plainville Wrentham	1,064	1,012
VII	Barnstable State Forest	Barnstable	58	59
VII	Brewster State Forest	Brewster	18	18
VII	Falmouth State Forest	Falmouth	18	18
VII	Martho's Vineyard State Forest	Edgortown	4,297	4,296
VII	Nantucket State Forest	Nontucket Island	137	137
VII	R. C. Nickerson State Forest (Now a State Park)	Brewster	1,778	-
VII	Sandwich State Forest	Sandwich	45	21
VII	Shawme State Forest	Bourne - Sandwich	1,648	1,648
		Total:	166,657	184,794
		Change:		+ 18,137
	C. STATE FOREST NURSERIES			
II	Amherst State Nursery	Amherst.	16	16
III	Clinton State Nursery. (2 more years of growth) (Will then be forest H.Q., Worcester District)	Clinton	21	21
V	Bridgewater State Nursery (Land belongs to State Hospitol)	Bridgewater	15	(Phased Out)
		Total:	52	37
	D. STATE FOREST FIRE TOWER STATIONS			
	53 Towers located on State, Municipol and Private Lots.			

II. Division of Marine Fisheries

VII	Oak Bluffs State Lobster Hatchery	Oak Bluffs	-	7

III. Division of Fisheries and Game

	A. STATE FISH HATCHERIES			
II	Montague State Fish Hatchery	Montague	71	72
II	Palmer State Fish Hatchery	Palmer	299	301
II	Sunderland State Fish Hatchery	Sunderland	63	69
III	Stockwell (Merrill) Ponds	Sutton	221	221
III	Sutton State Fish Hatchery	Sutton	23	23
VII	East Sandwich, State Fish Hatchery	East Sandwich	18	23
VII	Sandwich State Fish Hatchery	Sandwich	25	36
		Total:	720	745
	B. STATE GAME FARMS			
II	Wilbraham State Game Farm	Wilbraham	245	132
IV	Ayer State Game Farm	Ayer	92	97
V	Marshfield State Game Farm	Marshfield	50	-
VII	East Sandwich State Game Farm	East Sandwich	133	133
		Total:	520	362

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
	C. WILDLIFE SANCTUARIES			
I	Edward Howe Forbush Wildlife Sanctuary	Hancock	410	268
II	Grace A. Robson Wildlife Sanctuary	Westfield	62	70
III	Minn's Wildlife Sanctuary (Little Wachusett Mts.)	Princeton	138	137
III	Watatic Mt. Wildlife Sanctuary	Ashburnham	139	139
IV	Boxford Wildlife Reservation	Ashby Boxford	334	335
IV	Issaac Sprague Bird Sanctuary (Carr Island)	Salisbury	110	110
IV	Ram Island Sanctuary	Salisbury-Newburyport	20	20
V	Henry Cabot Lodge Bird Sanctuary	Nahant	1	1
V	Knight Wildlife Reservation	Rockport	11	11
VI	Ram Island	Mattapoisett	2	2
VII	Penikese Island	Buzzard's Bay	60	60
		Total:	1,287	1,153
	D. WILDLIFE MANAGEMENT AREAS (OPEN TO HUNTING AND FISHING)			
I	Peru Wildlife Management Area	Peru	500	2,525
II	Chester Wildlife Management Area	Chester	-	1,011
III	Barre-Phillipston Wildlife Management Area	Phillipston Barre	840	1,381
III	Westborough Wildlife Management Area	Westborough	174	174
IV	Crane Pond Wildlife Management Area	Groveland	-	1,570
IV	* Ft. Devens Wildlife Management Area	Shirley, Lancaster	-	2,000
IV	Northeast Wildlife Management Area	Newbury	-	1,318
IV	Rowley Marsh Wildlife Management Area (Now divided into Mill Creek & McDowell Areas)	Rowley	17	654
V	Pantry Brook Wildlife Management Area	Concord Sudbury	377	393
V	West Meadows Wildlife Management Area	West Bridgewater	205	218
VII	Crane Wildlife Management Area	Falmouth	-	1,562
VII	* Otis A.F.B. Wildlife Management Area	Bourne	-	3,000
		Total:	2,113	15,806
	E. OTHER DIVISION OF FISHERIES AND GAME HOLDINGS			
I	District H.Q.	Dalton	2	2
II	Little River	Huntington	-	10
II	Swift River Area	Belchertown	-	138
III	Birch Hill	Winchendon	-	108
III	Townsend Area	Townsend	-	60
IV	Flint Pond	Tyngsboro	-	89
V	Northeast D.H.Q.	North Acton	2	2
VII	Dillingham Lots	Sandwich	-	37
VII	Fisk Forestdale Lot	Sandwich	-	117
VII	Hog Pond Lot	Sandwich	-	40
VII	Lawrence Pond Lot	Sandwich	-	10

* Managed by Division of Fisheries and Game under Lease or Agreement with Owner.

Region	Name	Location City of Town	Total Acreage (Including Water) 1957	1965
	E. OTHER DIVISION OF FISHERIES AND GAME HOLDINGS (Cont'd)			
VII	Mashpee Pond Lot	Mashpee	-	25
VII	Quashnet River Area	Mashpee (Falmouth)	-	45
VII	Southeast District H. Q.	Bourne	35	35
		Total:	39	718
		TOTAL FISHERIES AND GAME PROPERTY:	4,679	18,784
		Change:		+14,105

SPECIAL STATE RESERVATIONS

(Special Commissions - Joint State and County Jurisdiction)

I	Mt. Everett State Reservation	Mt. Washington	815	1,000
I	Mt. Greylock State Reservation	Adams Cheshire New Ashford N. Adams Williamstown	8,600	9,000
II	Deer Hill State Reservation	Cummington Plainfield	259	260
II	Mt. Sugarloaf State Reservation	Deerfield	89	90
II	Mt. Tom State Reservation	Holyoke E. Hampton Northampton	1,679	1,800
III	Purgatory Chasm State Reservotion	Sutton	80	188
III	Wachusett Mt. State Reservation	Princeton Westminster	1,629	1,600
V	Waldon Pond State Reservation	Concord	144	268
VII	Edgartown-Oak Bluffs State Beach	Edgartown-Oak Bluffs	-	98
		Total:	13,295	14,304
		Change:		+ 1,009

MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS

I. Division of Waterways

A. OCEAN BEACHES

IV	Salisbury Beach	Salisbury	521	520
VI	Fort Phoenix State Beach Reservation	Fairhaven	-	23
VI	Plymouth Memorial Park	Plymouth	-	6
VII	Horseneck Beach	Westport	520	560
VII	Province Lands	Provincetown	3,810	CCNS
VII	Scusset Beach	Sandwich	500	380
		Total:	5,351	1,489
		Change:		-3,862

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965

B. GREAT PONDS

251 ponds, of the mare than 1200 ponds in the Commonwealth have been established as great ponds as of December, 1965.

A great pond is a pond af over ten (10) acres in area when in its natural state.

For public fishing purposes, however, a great pond is a pond of twenty (20) acres or over in its natural state.

METROPOLITAN DISTRICT COMMISSION
LAND WITHIN METROPOLITAN PARKS DISTRICT

I. Major Forest, River, Stream & Valley Reservations

V	Breakheart Reservation	Saugus Wakefield	621	600
V	Blue Hills Reservation	Braintree Canton Milton Quincy Randolph	5,930	6,000
V	Charles River Reservation	Cambridge Newton Waltham Watertown Weston Dedham Wellesley Boston	-	2,410
V	Middlesex Fells Reservation	Malden Medford Melrose Stoneham Winchester	2,165	3,273
V	Neponset River Reservation	Boston Quincy Dedham S. Dorchester	-	926
V	Newton-Brookline Water Lands	Newton Brookline Dedham	-	700
		Total:	8,716	13,909

II. Other M. D. C. Park Reservations

V	Beaver Brook	Waltham Belmont		60
V	Castle Island (Fort Independence)	S. Boston		15
V	Dilboy Field (Alewife Pkwy)	Somerville		20
V	Foss, Saxton J. Park	Somerville		16

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
II. Other M. D. C. Park Reservations (Cont'd)				
V	Georges Island (Fort Warren)	Bostan Harbor		28
V	Mystic Lakes (Mystic Valley Pkwy.)	Winchester		455
V	Mystic River Reservation	Medford Samerville		310
V	Stony Brook Reservation	Hyde Park		698 ← ?
V	Special Use Areas	-		117
		Total:	2,784	1,719

			Miles	Acres
III. Miles of Water Frontage (Ocean & Bayside Beaches)				
V	Lynn Shore-Nahant Beach	Lynn	1.5	180
		Swampscott		
		Nahant	2.93	
V	Malibu Beach	Bostan	.49	39
V	Marine Park	Boston	1.95	212
V	Nantasket Beach	Hull	1.02	116
V	Orient Heights Beach	Boston	.47	39
V	Revere Beach	Revere	2.74	196
V	Tenean Beach	Boston	.23	15
V	Winthrop Beach	Winthrop	1.71	75
V	World War Memorial	Boston	.51	50 out
V	Wollaston Beach	Quincy	2.19	206
			15.74	1,128

			Acres	Acres
IV. M.D.C. Waterlands Outside the Metropolitan Parks District				
II	Swift Watershed (Quabbin Reservoir)	New Salem Shutesbury Belchertown Pelham Ware Hardwick Petersham	80,960	80,420
III	Wachusett Reservoir Watershed	Boylston W. Boylston Clinton Sterling	10,809	10,809
III	Ware Watershed	Barre Hubbardston Oakham Rutland	21,120	20,250
V	Sudbury Watershed	Framingham Marlborough Northboro Westboro	5,235	5,235
		Total:	118,124	116,714
		Change:		-1,410
		TOTAL M.D.C. PROPERTY:		133,470

OTHER MUNICIPAL

I. Town Forests

Region	Name	Location City ar Town	Total Acreage (Including Water) 1957	1965
	139 Forests, 1957		41,571	-
	150 Forests, 1965		-	43,965

TRUSTEES OF RESERVATIONS

I	Bartholomew's Cobble	Sheffield	30	44
I	Chesterwood	Stockbridge	18	-
I	Mission House	Stockbridge	1	1
I	Monument Mt. Reservation	Gt. Barrington	257	257
I	Naumkeag	Stockbridge	-	26
I	Tyringham Cobble	Tyringham	-	222
II	Chapelbrook	Ashfield	-	128
II	Chesterfield Gorge	Chesterfield	52	61
II	Dinosaur Footprints	Holyoke	8	8
II	Glendale Falls	Middlefield	-	60
II	Petticoat Hill	Williamsburg	60	60
II	Wm. Cullen Bryant Homestead	Cummington	240	189
III	Doane Falls	Royalston	-	12
III	Elliott Laurel Reservation	Phillipston	25	25
III	Redemption Rock	Princeton	1	1
III	Royalston Falls	Roylaston	205	205
III	Tantiusques	Sturbridge	-	55
IV	Chas. W. Ward Reservation	Andover	276	340
IV	Old Town Hill	Newbury	111	225
IV	Stevens-Coolidge Farm	N. Andover	-	89
V	Agassiz Rock	Manchester	-	98
V	Charles River Peninsula	Needham	-	29
V	Governor Hutchinson's Field	Milton	10	10
V	Halibut Point	Rockport	12	12
V	Medfield Rhododendrons	Medfield	90	109
V	Misery Islands	Salem - (Shore Is.)	80	83
V	Mt. Ann Park	Gloucester	65	81
V	Noon Hill	Medfield	-	52
V	Old Manse	Concord	8	8
V	Orne Islond (Brown Is.) (Now called Crowninshield Island)	Marblehead	5	5
V	Pegan Hill	Dover Natick	-	31
V	Pierce House	Milton	-	6
V	Pine & Hemlock Knoll	Wenham	14	14
V	Richard T. Crane, Jr.	Ipswich	1,239	1,316
V	Rocky Narrows	Sherborn	39	53
V	Rocky Woods	Medfield	410	431
V	Whitney & Thayer Woods	Cohasset Hingham	733	783

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
	TRUSTEES OF RESERVATIONS (Cont'd)			
VI	Holmes Reservation	Plymouth	20	26
VII	Cape Page	Chappaquiddick	-	353
VII	Lowell-Holly Reservation	Mashpee	130	130
VII	Mashpee River	Mashpee	-	375
VII	Pamet River	Truro	-	20
		Total:	4,152	6,033
		Change:		+ 1,881

MASSACHUSETTS AUDUBON SOCIETY WILDLIFE SANCTUARIES

I	Pleasant Valley Wildlife Sanctuary	Lenox	640	660
II	Arcadia Wildlife Sanctuary	Northampton	300	300
III	Cook's Canyon Wildlife Sanctuary	Barre	35	35
III	Laurel Woods Wildlife Sanctuary	Holden	-	35
III	Wachusett Meadows Wildlife Sanctuary	Princeton	-	750
V	Drumlin Farm Wildlife Sanctuary	Lincoln	177	200
V	Eastern Point Wildlife Sanctuary	Glaucester.	-	26
V	Highland Farm Wildlife Sanctuary	Belmont	-	22
V	Ipswich River Wildlife Sanctuary	Topsfield Wenham Hamilton	2,000	2,300
V	Little Pond Wildlife Sanctuary	Sherborn	-	273
V	Marblehead Neck Wildlife Sanctuary	Marblehead	15	15
V	Moose Hill Wildlife Sanctuary	Sharon	250	310
V	Nahant Thicket Wildlife Sanctuary	Nahant	4	4
V	No name yet	Holliston, Hopkinton	-	200
V	No name yet	Weston	-	15
V	Rocky Knoll Wildlife Sanctuary	Milton	1	2
V	Stony Brook Wildlife Sanctuary	Norfolk	-	22
VII	Ashumet Holly Reservation Wildlife Sanctuary.	E. Falmouth	-	45
VII	Sampson's Island Wildlife Sanctuary	Cotuit	16	16
VII	Tern Island Wildlife Sanctuary (Chatham Coast)	Chatham	10	10
VII	Wellfleet Wildlife Sanctuary	S. Wellfleet	-	650
		Total:	3,448	5,890
		Change:		+2,442

UNIVERSITY OF MASSACHUSETTS

II	Cadwell Memorial Forest	Belchertown Pelham	1,200
II	Mt. Toby Demanstration Forest	Leverett Sunderland	755
		Total:	1,955

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
U.S. DEPARTMENT OF AGRICULTURE, U.S. FOREST SERVICE				
I	Hopkins Memorial Forest	Williamstown	1,600	1,600
	Other Holdings		51	51
		Total:	1,651	1,651
U.S. DEPARTMENT OF DEFENSE				
I. Corps of Engineers				
II	East Brimfield Reservoir	Brimfield	-	2,070
II	Knightville Reservoir	Huntington	2,583	2,430
	Flood Control Area			
II	Tully Reservoir Flood Control Area	Orange Athol Royalston	1,300	1,300
III	Barre Falls Reservoir	Barre	-	557
III	Birch Hill Reservoir Flood	Royalston	4,394	4,395
	Control Area	Templeton Winchendon		
III	Buffumville Reservoir	Charlton	-	488
III	Hodges Village Reservoir	Oxford	-	873
III	West Hill Reservoir	Uxbridge	-	614
III	Westville Reservoir	Sturbridge	-	578
V	Engr. Dock & Garage	Boston	4	-
VII	Cape Cod Canal	Bourne Sandwich Wareham	1,183	1,598
		Total:	9,419	14,903
		Change:		+5,484
U.S. DEPARTMENT OF THE INTERIOR				
I. Wildlife Sanctuaries				
IV	Parker River National Wildlife Refuge	Newbury Rowley Ipswich	6,405	6,419
V	Great Meadows National Wildlife Refuge	Concord	210	-
V	Sudbury National Wildlife Refuge	Sudbury & Concord Billerica Carlisle	-	809
VII	Monomoy National Wildlife Refuge	Chatham	2,921	2,698
		Total:	9,536	9,926
		Change:		+ 390

Region	Name	Location City or Town	Total Acreage (Including Water) 1957	1965
II. Fish Hatcheries and Research Station				
I	Berkshire Trout Hatchery	Hartsville	137	-
VI	North Attleboro Fish Hatchery	North Attleboro	268	-
VII	Woods Hole Federal Marine Research Station	Woods Hole	4	-
III. National Park Service				
V	Minuteman National Historic Park	Concord	-	316
V	Salem Maritime National Historic Site	Salem	9	9
V	Adams National Historic Site	Quincy	5	5
VII	Cape Cod National Seashore (Includes former Province Lands and Pilgrim Springs State Park)	Provincetown	-	12,459
	TOTAL: U.S. DEPARTMENT OF THE INTERIOR:		9,959	22,715
	Change:			+12,756
IV. Other Holdings			2,981	-

FEDERAL SURPLUS LANDS DECLARED UP FOR DISPOSAL

General Services Administration Listings	3,968

SUMMARY OF REGIONAL INCREASES IN RECREATION AREAS, 1957 TO 1965

Region		Additions to Existing Areas	New Areas	Total
I, Berkshires	Acreage	7,823	2,765	10,588
	Number	18	6	24
II, Connecticut Valley	Acreage	7,997	3,716	11,713
	Number	18	10	28
III, Central Highlands	Acreage	4,445	5,128	9,573
	Number	14	13	27
IV, Merrimack Valley	Acreage	1,047	5,103	6,150
	Number	7	6	13
V, Massachusetts Bay	Acreage	2,119	6,341	8,460
	Number	19	26	45
VI, Southeastern	Acreage	324	767	1,091
	Number	5	4	9
VII, Cape Cod and The Islands	Acreage	514	14,542	15,056
	Number	5	15	20
Massachusetts	Acreage	24,269	38,362	62,631
	Number	86	80	166

MASSACHUSETTS OUTDOOR RECREATION PLAN
INVENTORY

NAME OF AREA: _____

EXISTING ☐ POTENTIAL ☐

TOWN AREA LOCATED IN: _____

REGION	US

ADMINISTRATIVE AGENCY: _____

OWNER: FEDERAL ☐ STATE ☐ COUNTY ☐ TOWN/CITY ☐ QUASI-PUBLIC ☐ PRIVATE ☐

ACRES: LAND _____ WETLANDS _____ WATER _____ TOTAL _____

ACTIVITY		I HIGH DENSITY	II GENERAL OUTDOOR	III NATURAL ENVIRONM'T	IV OUTSTAND'G NATURAL	V PRIMITIVE AREAS	VI HISTORIC, CULTURAL	TOTALS	USE	UNITS
DRIVING & SIGHTSEEING	S									
	C									
SWIMMING	S									
	C									
WATER SKIING	S									
	C									
BICYCLING	S									
	C									
SALT WATER FISHING	S									
	C									
FRESH WATER FISHING	S									
	C									
PICNICKING	S									
	C									
NATURE STUDY	S									
	C									
BOATING -- MOTOR	S									
	C									
BOATING -- NON-MOTOR	S									
	C									
HUNTING	S									
	C									
HORSEBACK RIDING	S									
	C									
GOLF	S									
	C									
CAMPING	S									
	C									
ICE SKATING	S									
	C									
SLEDDING or TOBOGANNING	S									
	C									
SNOW SKIING	S									
	C									
HIKING or WALKING	S									
	C									
MOUNTAIN CLIMBING	S									
	C									
GAMES and SPORTS	S									
	C									
VIEWING SPORTS	S									
	C									
DRAMA or CONCERTS	S									
	C									
OTHER	S									
	C									
TOTALS	S									
	C									
PARKING AREAS	S									
	C									

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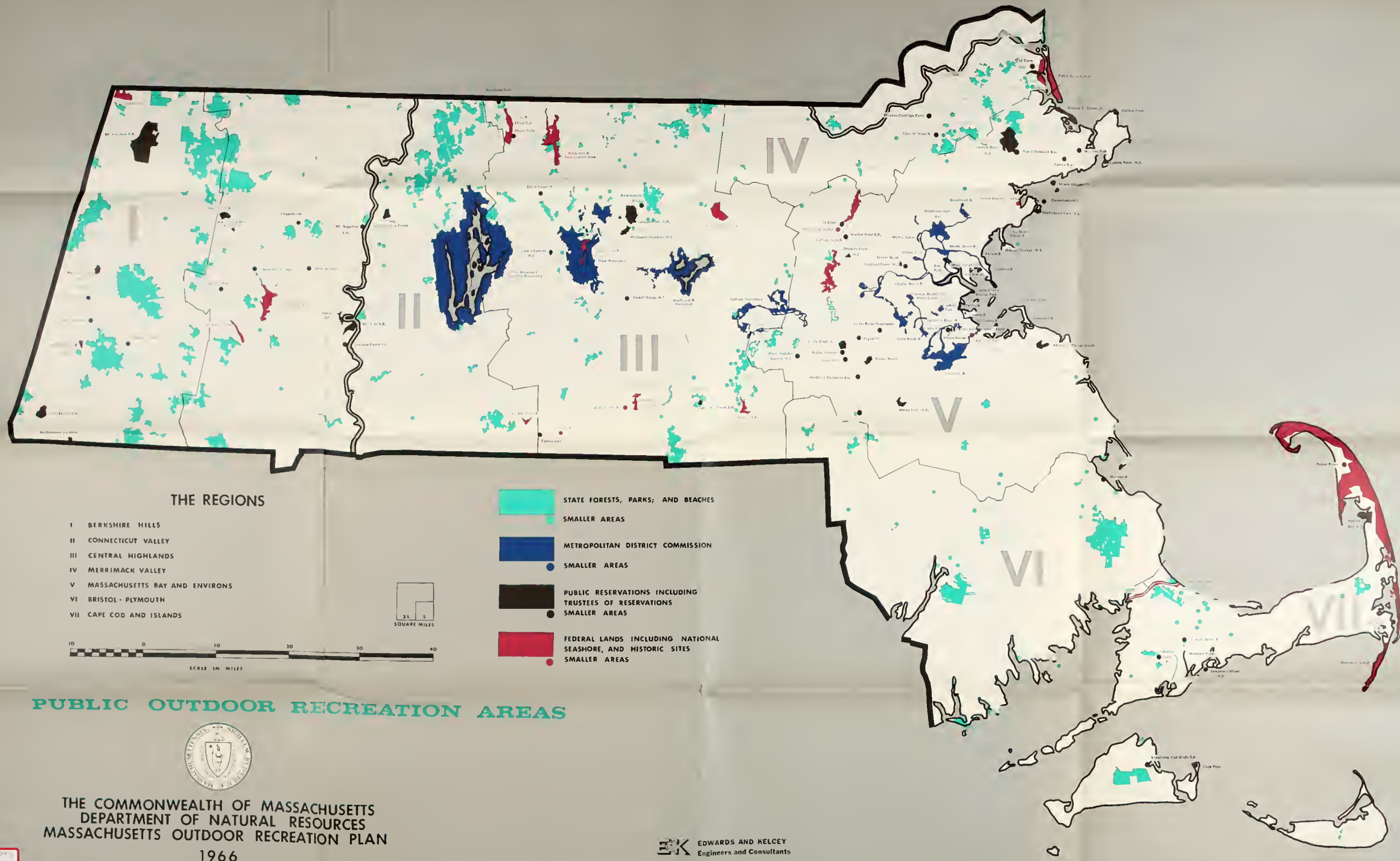

THE REGIONS

I BERKSHIRE HILLS
II CONNECTICUT VALLEY
III CENTRAL HIGHLANDS
IV MERRIMACK VALLEY
V MASSACHUSETTS BAY AND ENVIRONS
VI BRISTOL - PLYMOUTH
VII CAPE COD AND ISLANDS

35 5
SQUARE MILES

10 0 10 20 30 40
SCALE IN MILES

STATE FORESTS, PARKS; AND BEACHES
SMALLER AREAS

METROPOLITAN DISTRICT COMMISSION
SMALLER AREAS

PUBLIC RESERVATIONS INCLUDING TRUSTEES OF RESERVATIONS
SMALLER AREAS

FEDERAL LANDS INCLUDING NATIONAL SEASHORE, AND HISTORIC SITES
SMALLER AREAS

PUBLIC OUTDOOR RECREATION AREAS

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF NATURAL RESOURCES
MASSACHUSETTS OUTDOOR RECREATION PLAN
1966

EDWARDS AND KELCEY
Engineers and Consultants

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